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Journal of Higher Education

Vol. 19 No. 1 Spring 1996

CONTENTS

			Page
1.	Editorial	*Anand Sarup*	5
2.	Image of Indian Science and Scientific Community	*S.Pruthi and Ashok Jain*	9
3.	Strengthening the Colleges of Teacher Education in India: An Appraisal Study	*V.K.Raina*	31
4.	Improvement of Standards—An abiding concern of the UGC	*S.P. Gupta*	43
5.	Curriculum for Orientation Programs in Higher Education	*B.K. Passi and Rajendra Pal*	53
6.	Are Screening Tests Essential?	*Atma Ram*	67
7.	A Conversion Scale for Different Grading Systems	*B.K. Bhattacharya*	71

Documentation

8.	Institutions of Higher Education in U.K. and Canada - A Study Report	*Inderjit Khanna, P. Bhatia, R.P. Gangurde, P.H.Sethumadhava Rao and Nirmal Singh*	85
9.	National Assessment and Accreditation Council Activity Report (November 1994 - October 1995).		143
	Our Contributors		151

ISSN 0252-0397

Journal of Higher Education

Vol. 19 No. 2 Summer 1996

CONTENTS

		Page
1. Editorial	*Anand Sarup*	157
2. Listening as an Educational Agenda	*Kailash S. Aggarwal*	167
3. Global Transformation and the Search for a New Education Design	*T.R. Morrison*	181
4. Whither Education Policy, 1986?	*Ambrose Pinto*	219
5. IGNOU's: Challenges of Quality, Quantity and Equity	*Ram Takwale*	231
6. Improving the Question Paper	*Atma Ram*	247
Notes from Research and Documentation		
7. Implementing Instructional Design in B.Ed. Course	*V. Usha Sri*	251
8. Towards Re-structuring of Undergraduate Education	*Veena Das*	259
9. Re-structuring of Undergraduate Education	*Nandita Narain*	275
10. NAAC Guidelines for Initiation of Assessment and Accreditation Process: Preparation of a Self Study Report		281
11. NAAC Guidelines for the setting up of Internal Quality Assurance Cell		285
Correction to the Article on 'Image of Indian Science and Scientific Community', JHE Vol. 19 No. 1, 1996		293
Our Contributors		295

ISSN 0252–0397

Journal of Higher Education

Vol. 19 No. 3 Monsoon 1996

CONTENTS

Pages

1. Editorial — *Anand Sarup* — 301–307
2. W(h)ither Language Equality ? — *Kailash S. Aggarwal* — 309–332
3. Which are the Best Undergraduate Medical Colleges in India ? — *M. Arora, J.K. Banerjee, P. Sahni, G.K. Pande and S. Nundy* — 333–352
4. Quality Assurance in Higher Education : An Indian Dilemma — *Arun S. Nigavekar* — 353–364
5. Determinants of Private Cost of Ph.D. Research : A Case Study — *P. Arumugam and P. James Daniel Paul* — 365–374
6. Privatization of Higher Education in India — Some Lessons from USA — *Mridula Sharma* — 375–399
7. Taking Higher Education High Enough — *M.N. Palsane* — 401–404
8. Multiple Choice Papers : Is Guessing Better than Omission? An Illustration — *Y. Shreemathi* — 405–411
9. Improving Higher Education : A Strategy for Action — *Padma S. Chari* — 413–420

Documentation and Notes from Research

10. TIFAC'S 'Technology Vision 2020' Reports — 421–435
11. Distance Higher Education in India : A Historical Overview — *M.S. Yadav and S.K. Panda* — 437–460

Book Reviews

12. Making Higher Education Effective by P.H. Sethumadhava Rao — *Balakrishna K. Nayar* — 461–464
13. Science as a Questioning Process by Nigel Sanitt — *Arun S. Nigavekar* — 465

Our Contributors — 466

Journal of Higher Education
Volume 19 No. 1 Spring 1996

Editorial

Futurologists, planners, policy makers, and resource managers everywhere are agog with the emerging scenario of a new knowledge based and technology driven world order. It seems likely that in the coming years, not only will the processes of production, management, marketing, financing etc. become radically reoriented but even the approaches to cultural identities and national sovereign will have to be redefined.

We had drawn attention to these trends earlier also while commenting editorially on Peter Drucker's book: the Post-Capitalist Society, in the Summer '94 issue of this journal and, inter alia, highlighted the importance this distinguished thinker had given to the contents and qualitative reliability of education.

There is no doubt that the world is once again in the throes of a technological revolution which might, if the developing countries fail to wake up, end up in a kind of remote controlled colonialism far more powerful and invasive than anything humanity has experienced before. Instead of entering and taking control of territories on the strength of arms, now the invaders will come through the micro-chips, satellites, computers, robots and multi-media monitors on the technological strengths garnered through multi-disciplinary researches in far off lands.

India was unable to participate in full measure in the earlier revolutions in science and technology. Will it let the new scientific and technological revolution also pass-by without making even an effort to understand what is happening and explore whether it too can make a distinctive place for itself in the emerging scenario?

A lot of people on the Indian sub-continent know what is happening all over the world and some of them are, within their own spheres, actively participating in the new developments. However, there is no evidence that an organised effort is afoot to formulate a holistic view of what could or would be happening in India and elsewhere and to propose what preparatory steps India should take to take control of its destiny. Clearly retroactive action with or without the advice of distant advisors will not serve the purpose. Apart from being too little and too late, it may not enable us to protect ourselves from the manipulative designs of the bold and powerful players already in control. Nobody is going to give us a free launch; we will have to work out our own solutions. If we allow ourselves to be led by others, everybody will try his best to grasp our own market as well as our human, natural and ecological resources.

In the context of the above observations, we will have to think of the future agenda for the development of human resources, whose quality, educational status and resourcefulness, it is universally agreed, will decide the fate of this country. This inevitably places education, including higher education, at the centre of the stage, with its myriad problems compounded by our unwillingness to come to grips with them.

We still have a large percentage of illiterates in our population. According to NSSO (1991), our enrolment, even in respect of primary education, is well below (less than 70 per cent) the level required for universalization and this coupled with our dropout rate of 36 per cent between class I and V can spell nothing but disaster.

We have quite a few highly expensive and state of the art private schools for the elite but most of our children, specially in the villages, have to go to ill-endowed and poorly managed schools to be taught, with honourable exceptions, by indifferently trained and disinterested teachers.

In the case of higher education also, we seem to be baulking at supporting even five per cent of our youth going to colleges and universities. What, however, is much worse, we are allowing the perpetuation of gross inequalities in the matter of access, diversity, relevance and quality between institutions, colleges and universities, rural and urban areas and the physico-geographic regions.

While this long-standing stalemate continues, several developments threaten the very structure of India's system of higher education which is characterised, inter alia, by:

- its deriving legitimacy and resources entirely from the legislatures and governments;
- its hierarchical structure;
- its neatly defined territorial jurisdictions;
- its system of core universities and affiliated colleges;

- its emphasis on autonomy without corresponding mechanisms of accountability; and of course,
- its inequalities, with some of its institutions and their products being of an extraordinary quality while the average is well below internationally acceptable standards, particularly in the case of science and arts education.

Already it is evident that within the next few years, a pluralistic situation will emerge not only because of the coming up of private universities but also because of a variety of entrepreneurs acting on their own to create educational institutions and systems of assessment and accreditation independent of the government. N.I.I.T., Aptech and a host of other institutions have already destroyed the exclusivity enjoyed hitherto by institutions set up, aided or recognized by the government. However, the operation of foreign institutions on their own or in tandem with Indian partners will, specially because of the facilities of inter-continental, multi-media satellite communications, upset the hierarchical order, as well as, the marking out of neat territorial jurisdictions. Both in the matter of research as well as of teaching, at least for the elite institutions, the limitations of physical contiguity and territorial jurisdiction will get breached, giving ample scope for collaborations on a global basis. Already, it is anachronistic to talk of Indian or Australian or Sub-Saharan science. It is more than likely that a few years hence, there will either be some good quality global networks of higher education with high mobility characteristics or a large number of poorly endowed and dysfunctional micro-systems of education.

One does not mind if, after proper debate, these hypotheses of the scenarios of change are rejected. However, given the trends already visible on the horizon, these propositions cannot, without careful reflection, be rejected out of hand.

There is an urgent need to start exploring the future and planning not only for what is inevitable but also for what is feasible for India, given its inherent strengths and many weaknesses. We invite our readers to think about the shape of the world of the 20s of the 21st century and against this background imagine how India will evolve under the impact of the global forces of change. We earnestly hope that they will write about what they see in the crystal ball and what initiative, in their view, should be taken in the realms of education, specially higher education, to derive full benefits from scientific and technological developments already visible on the horizon.

• •

South Asian Survey

A Sage Journal

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The major aim of **South Asian Survey** is to enhance the understanding of South Asia among the countries of the region and beyond. It carries contributions from scholars, policy-makers, civil servants and journalists, providing in-depth analyses with a multidimensional approach. Although issues of national and regional concern are debated primarily from the perspectives of politics, economics and international relations, **South Asian Survey** also draws upon insights from the fields of culture, history and mass communications. Book reviews are also carried. The journal is a biannual publication of the Indian Council for South Asian Cooperation.

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Volume 19 No. 1 Spring 1996

Image of Indian Science and Scientific Community*

S. PRUTHI AND ASHOK JAIN

Introduction

It is widely held that Indian science and technology has, till now, not been able to contribute effectively to the socio-economic growth of the country. According to Professor C.N.R. Rao, Chairman of the Scientific Advisory Council to the Prime Minister, it is disheartening despite a tremendous build up of infrastructure, we have only some islets of excellence in a sea of mediocrity. Professor A.K.N.Reddy of the Indian Institute of Science is not far from reality when he says: "The goals of science are determined by western concepts and not by what is relevant to the needs and conditions of the people who live in India's villages[1]. The mismatch makes much of the research meaningless.

With the increasing professionalisation and institutionalization of science and technology in India, claims of science and technology on public funds on the one hand and the societal demands on science and technology on the other, have necessitated frequent evaluation and review of the performance of Indian science. The critics of Indian science feel that Indian science has not been able to deliver. the goods and many have focussed their criticism on management issues. Problems like meager R&D expenditure per scientist in comparison to not only to developed countries but also to some of the developing countries; lack of coordination and coherence between investments and priorities; gap between policy formulation and programme implementation; inadequate resources; inadequate management of creativity; inadequate linking of science and technology with socio-economic development; inept government policies; a rule-ridden bureaucracy; lack of accountability etc. have been mentioned as the causes for the sluggish performance of Indian science and technology[2-6]. At the institutional level, unavailability of a creating environment (autonomy, motivation and control), poor commitment of scientists and their leadership, and the lack of an objective evaluation system are seen as crucial issues of today[1-35].

---

* Presented at the Fifth International Conference on Scientometerics and Informeterics on 7-10th June 1995 in Chicago

Survey Methodology

Most of the issues raised by the critics of Indian science refer essentially to the professional and behavioral norms expected in a healthy science environment. The norms of science as identified by Merton[36] are communalism, universalism, disinterestedness and organised scepticism, (CUDOS).

Communalism: Science is public knowledge, freely available to all. The results of research do not belong to the individual scientist but to the world at large. Scientific results should be communicated immediately to the scientific community by publication in open literature on which anyone may draw upon for future use.

Universalism: There are no privileged sources of scientific knowledge. Discovery claims and theoretical arguments based on scientific research should be according to their intrinsic merits regardless of the nationality, race, religion, class, age or scientific standing of the person who produces them.

Disinterestedness: Scientists should undertake research and present their results with no other motive but the advancement of knowledge. They should not have any personal stake in the acceptance or rejection of any scientific idea. A scientist should not bolster his/her scientific discovery/ claim unless it is approved by peers.

Organised Scepticism: scientific knowledge, whether new or old, should be continually scrutinized for possible errors or inconsistencies of argument. Although scepticism is strongly encouraged within the scientific community, it is not organised systematically and is given very little recognition as a distinct personal trait.

It is generally claimed that Mertonial norms are no longer valid today because of the institutionalization and professionalisation of science and the development of new linkages among science and the socio-economic and political systems[36-38]. A few professional and behavioral norms are still being followed by the scientific community while pursuing scientific research[39]. These norms, if pursued in right earnest, can facilitate inculcation of interactive and democratic values required for nurturing quality science; otherwise they can set in a wave of frustration among the scientific community, which may not be helpful in maintaining the tempo of scientific research and may, in fact, lead to erosion of the democratic values essential for doing quality science[40]. Are these norms followed by the Indian scientific community?

In order to communicate these professional and behavioral norms for soliciting the opinion of working scientists through a questionnaire, the following categories of issues were identified:

(i) Norms followed by scientific community.
(ii) Practices pertaining to recruitment, promotion and recognition recorded to S & T personnel
(iii) Environment in research institutions
(iv) Practices for awarding research grants
(v) Barriers to interaction and
(vi) Channels of communication

A pre-coded and structured questionnaire on the above issues, including demographic information, was designed.

The questionnaire was pre-tested in Indian Agricultural Research Institute, New Delhi, Delhi University, and Indian Institute of Technology, Delhi. Demographic information sought pertained to age, sex, qualifications, field of specialization, type of activities and institutional affiliation of the scientist. The perceptual information obtained related to issues like, junior versus senior scientists, research environment, quality of scientific research, practices pertaining to recruitment and assessment of S&T personnel, team spirit and interaction and funding of research projects. Perceptual information was sought either on bipolar statements or on five point scale.

The survey population consisted of active scientists selected randomly from a database of about 30,000 first authors whose abstracts or papers are included in Indian Science Abstracts,1986.Random numbers were generated by computer. These numbers were matched with serial numbers of first authors and thus six thousand first authors were selected using random stratified sampling technique. Consent cards were mailed to these six thousand first authors. By April 1990, 2,700 respondents sent their consent to participate in this survey. 1450 filled in questionnaire were received.

As regards the reliability and validity of the variables, interitems correlations among various variables, means and Cronbach alphas have been computed. The values of alphas show high level of reliabilities. The value of alpha in each variable is +0.8.

Cronbach alpha has been computed by using the following formula:

$$\alpha = \frac{K}{(K-1)}(1-\sum \sigma_i^2 / \sigma_t^2)$$

where K is number of items in a variable; σ_i^2, the variance of item i; σ_t^2 is variance of the scale (Index).

All the values of interitems correlations are found statistically significant and large indicating convergent validity. For quantifying perception regarding various issues, bivariate analysis has been attempted.

Respondents' Characteristics

The characteristics of 1450 respondents are shown in Figure 1. A majority of the respondents belong to universities (55%), followed by government research institutes (28%) and industry (3%). Age-wise, the break-up of respondents is as follows: 36-45 years, 41%, 46-55 years 31%, 26-35 years 17.6%, above 55 years, 10%;and up to 25 years, 1%. As expected, male respondents account for 92%of the total respondents and female only 8% of the total. According to field of specialisation, 41% of the respondents belong to biological sciences followed by medical sciences (14%), chemical sciences (12%) and physical sciences (8%). The least number of respondents (2%) have specialisation in atmospheric sciences.

With regard to source of funds, about 54% of the respondents are involved in both internal and government agencies funded projects, while about 41% have only internally funded projects. About 8% of the respondents

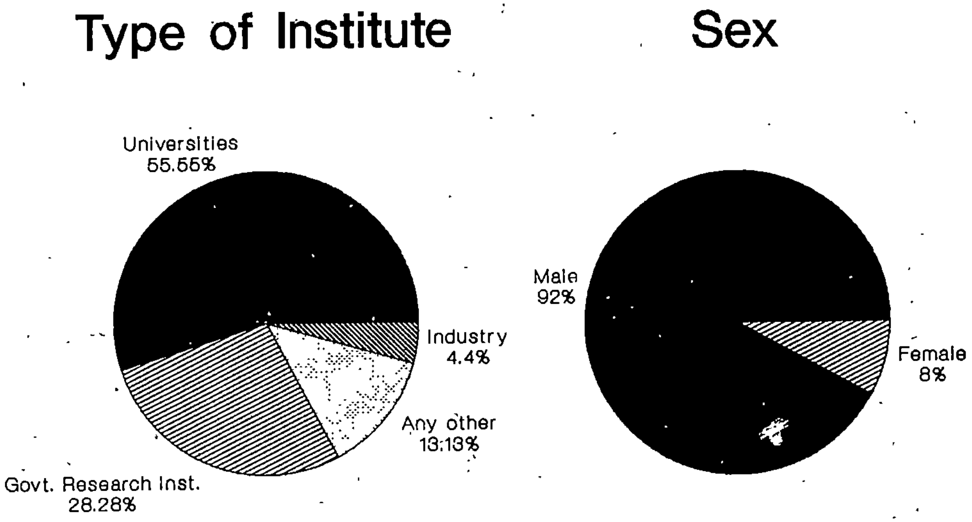

Fig. 1 : Respondents' characteristics.

have also received funds from non-governmental sources. The number of respondents who have received funds from foreign sources is the smallest, constituting only about 7% of the total (Figure 2).

It is in this backdrop it was considered worthwhile to conduct an opinion survey so as to ascertain the perceptions of representative Indian scientists and engineers about the image of science and technology in India.

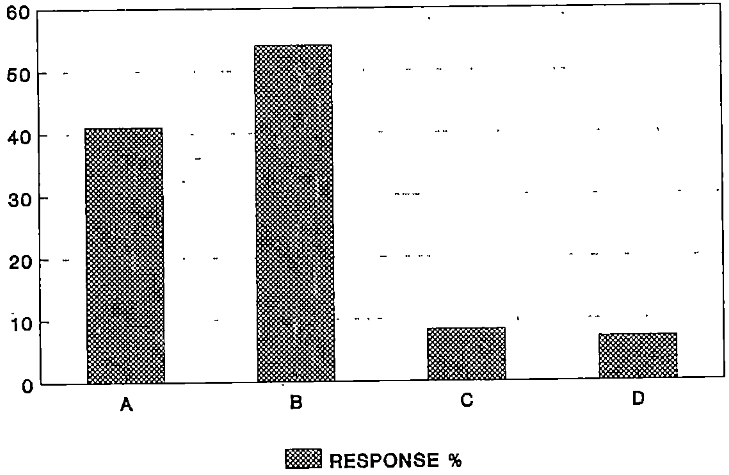

Fig. 2 : Funding of projects.

(A-Internal Funds, B=Internal & Government Agencies Funds
C=Internal & Non-Govt. Funds, D=Foreign Funds)

Norms of Science : Scientific researchers like other professionals claim a high level of autonomy comparable to autonomy granted to those professions that are self-regulating. Such social control is exercised through scientific community by observing codes of conduct. The norms of science as identified by Merton are communalism, universalism, disinterestedness and organised scepticism (CUDOS).

It is generally claimed that Mertonial norms are no longer valid today because of the institutionalization and professionalisation of science and the development of new linkages among science and the socio-economic and political systems[37]. A few professional and behavioral norms are still being followed by the scientific community while pursuing scientific research. These norms, if pursued in right earnest, can facilitate inculcation of interactive and democratic values required for nurturing quality science; scientific community, which may not be helpful in maintaining the tempo of scientific research, leading to erosion of the democratic values essential for doing quality science.

According to the perception of scientists and engineers regarding individual norms, it is observed that respondents are satisfied in respect of certain norms, namely, maintenance of high professional standards regarding authenticity and validity of data and scientists' hesitation to criticise each other's work. They are mainly dissatisfied regarding the following norms; (i) giving due credit to junior colleagues; (ii) discussing their problems within the group and with scientists within and outside the institute; (iii) evaluating the research work of fellow scientists strictly on the basis of scientific merit; (iv) doing research work on creative and original ideas; and (v) showing tolerance to criticism of research work. In each case, the proportion of respondents' in disagreement is more than 40% of respondents. The disagreement is the highest in respect of Indian scientists working on creative and original ideas (48%), while it is the lowest in respect of Indian scientists known for evaluating the research work of fellow scientists, specially its scientific merit (more than 43%) (Figure 3).

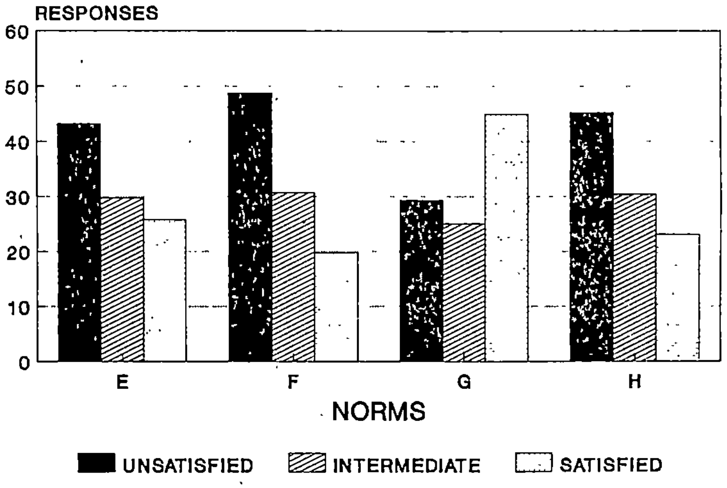

Fig. 3 : Respondents' Frequency for Norms Followed by Scientific Community Pursuing Research.

(A=Authority of data; B=Credit to junior colleagues; C=Discussion with immediate colleagues; D=Discussion of research problems outside institute; E=Evaluation of research on merit; F=Research work on original ideas; G=Hesitate to criticise each other's work; H=Tolerance to criticism.)

Factors Influencing S&T

The growth of science and technology in any country is influenced by both intrinsic and extrinsic factors and India is no exception to this. Modern science and technology were introduced in India by the British during the colonial period. Therefore, development of science and technology was influenced by the trends and developments in S&T in western countries, notably Britain. They are influenced by two types of factors: (a) the intrinsic factors including : increase in scientific activity at international level; and desire to compete with other countries; and (b) extrinsic factors including : government support and commitment to science and technology, availability of qualified scientific and technical manpower; and recognition by scientists of the role of science and technology in socio-economic development.

Extrinsic Factors: A majority of the respondents agree that government support/commitment to science and technology and availability of scientific and technical manpower are the predominant factors influencing the development of science and technology. It is well known that one of the objectives of India's earlier Five Year Plans was to create a wide base of S&T infrastructure, which could be harnessed to subserve the national goals of socio-economic development through the work of scientists and engineers. In this context, availability of S&T manpower and the generation of scientific and technical manpower are the most important factors; developments in these areas have been on the expected lines. The other factors, such as government support and commitment to science and technology, is clarified by the fact that, in India, government is the main supporter of scientific research, while industry continues to be a passive actor, as is evident from the relative expenditures incurred by the government and industry for supporting scientific research. It is surprising to note that Indian scientists have given least importance to the recognition given by them to the role of science and technology in socio-economic development.

Intrinsic Factors : According to the perception of scientists and engineers, increase in scientific activity at international level and the desire to compete with other countries are important factors. More than two-fifths of the respondents agree that these factors have stimulated the development of indigenous science and technology. Indian science and technology being a part of of global culture, it is but natural for the development of science and technology to be influenced by these factors. However, it needs to be examined whether local factors outweigh the external ones or otherwise (Figure 4).

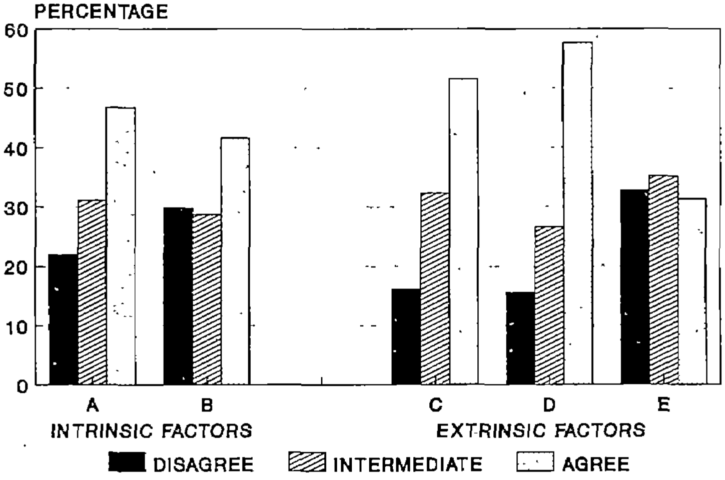

Fig. 4 : Factors Influencing Growth of Science and Technology.

(A=Increase in scientific activity at the international level; B=Desire to compete with other countries; C=Government support/commitment to science and technology; D=Availability of scientific and technical manpower; E=Recognition of scientists of the role of S&T in socio-economic development.)

Factors Inhibiting Scientific Research : Science in India is being administered by rules and regulations framed and implemented by a bureaucratic set up and not in a manner conducive to its development or to its performance, both quantitatively and qualitatively. Besides the limited availability of financial resources, poorly maintained laboratories, discontentment among the scientific community, lack of an active peer system for evaluation, and bureaucratic and political interference seem to be the major impediments to the progress of science. An additional factor could be the inadequacy of the opportunities available to Indian scientists for the communication of research results, ideas and information.

The first five inhibiting factors recorded by scientists and engineers are : bureaucracy, lack of career development opportunities; lack of cooperation among scientists; inadequacy of planning; and internal politics in institutions. Least preference (Importance) is given to linkages with users. The results are in conformity with the earlier remarks about lack of appreciation of the role of socio-economic imperatives in stimulating the development of science and technology.

Recruitment and Promotion Practices of S&T Personnel

Scientific and technical personnel constitute the blood and life of scientific research institutions. Therefore, it is necessary that these institutions not only attract and recruit highly educated scientists and technologists but should also maintain their motivation to the extent that they contribute optimally in attaining the goals of the Institute. Secondly, proper utilization of S&T manpower in scientific research is a matter of great importance. To monitor the role of a scientist as a member of a research team, it is necessary that his efforts are evaluated periodically[41]. Most of the literature on evaluation and rewarding system in scientific research is of western origin and relates to terms and conditions of work in the western environment. In India, a majority of scientific research institutions are highly centralized and bureaucratic in their structure and culture. In India, the procedures employed for recruitment, promotion and recognition are inefficient and unauthentic for a variety of reasons, such as, availability of a limited job market, lack of horizontal and vertical mobility of S&T manpower, and inbreeding. All this perpetuates mediocrity and stultifies creativity in R&D. It is felt that evaluations have generally been used as punitive measures of coercion and organizational control without any regard to the development aspect. Such a situation is bound to be counter-productive and may defeat the very purpose of evaluation[42].

Analysis of perceptions revealed that a majority of the respondents are in disagreement with the following statements:

1. *High standard in professional experience is a major criterion in the recruitment practices of the institutions.*
2. *Career advancement comes by quality of work rather than by favouritism.*
3. *A healthy competition is maintained within the institution.*

A majority of the respondents (more than 55%) disagree that career advancement comes by quality of work rather than by favouritism. While 53% of the respondents disagree that a healthy competition is maintained within the institution, more than 50% feel that high standards in professional experience is not a major criterion in the recruitment practices of the research institutions. This pattern of responses definitely reflects on the quality of S&T manpower being recruited and employed for doing scientific research (Figure 5).

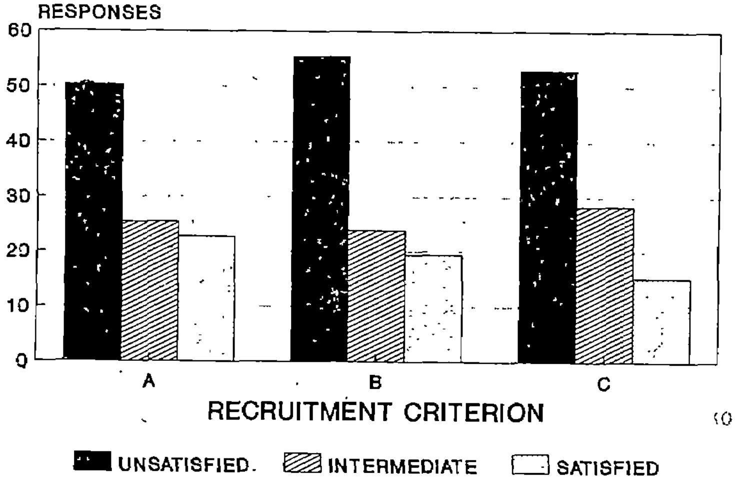

Fig. 5 : Respondents' Frequency with regard to Recruitment Criteria.

(A=Professional experience a major criteria; B=Career advancement comes by quality work; C=Maintain healthy competition.)

The respondents were of the view that academic qualification is the most important factor for career advancement. It is closely followed by : (i) papers published in foreign journals, (ii) right connection with people who matter, (iii) professional contacts, (iv) preference given to internal candidates, (v) number of awards and prizes, (v) patents accepted and (vi) prestige of institutions awarding the highest degree were given less importance. However, membership of professional bodies is considered unimportant by respondents with regard to recruitment of S&T personnel (Figure 6).

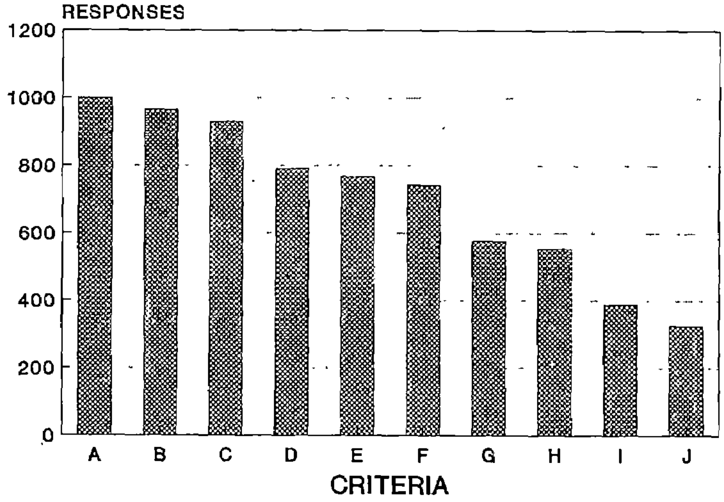

Fig. 6 : Factors Influencing the Recruitment of Scientific and Technical Personnel.

(A=Academic qualifications; B=Papers published in foreign journals; C=Right connection with people; D=Professional contacts; E=Preference given to internal candidates; F=Professional experience; G=Number of awards and prizes; H=Prestige of supervisor; I=Patents accepted; J=Prestige of institute awarding highest degree.)

From the preceding discussion, one may infer that respondents feel dissatisfied because of a few social criteria like right connections with people who matter in decision-making, and professional contacts, etc. are given more weightage than some of the scientific criteria, e.g. number of papers published in foreign journals, professional experience and patents accepted. One of the reasons for this may be the small number of patents accepted in comparison to the number of patents filed. Nevertheless, a patent represents a potential innovation.

With regard to the assessment of scientists and engineers for promotion, awards and evaluation, expert evaluation/review and papers published are considered as the most important criteria. These are followed by professional contacts, loyalty to seniors, scholarly communication and number of patents filed/accepted. Number of grants received are given relatively less importance. Ability to disagree with seniors and membership of academic and professional societies are considered unimportant (Figure 7).

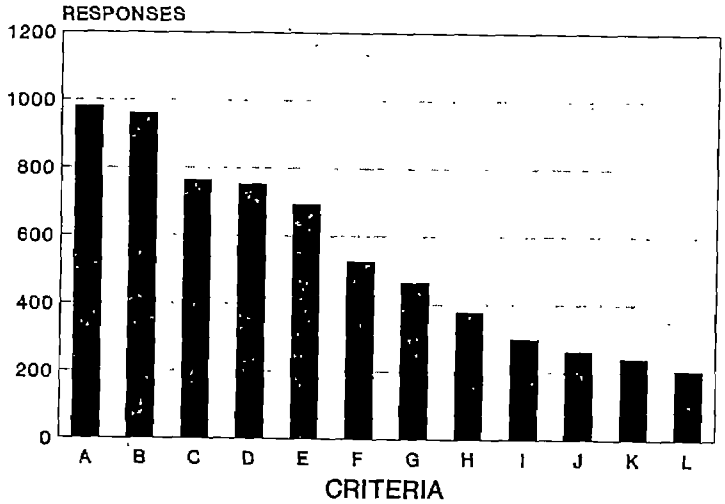

Fig. 7 : Factors Influencing the Assessment of the Performance of Researchers.

(A=Expert evaluation/review, B=Papers published in journals; C=Professional contacts; D=Loyalty to seniors; E=Number of awards and prizes; F=Scholarly communication; G=Number of dissertations supervised; H=Patents filed/accepted, I=number of grants received; J=Number of citation paper received; K=Self assessment report; L=Preparation of technical report.)

Research Environment

Creative research is an intellectual enterprise. Ideas are often revealed during discussion with peers. However, intellectual constraints arising out of practices such as obedience to authority and seniority, fear of free expression, dishonesty of purpose or means, destructive criticism, and lack of appreciation of good work done, go to build an atmosphere which can be destructive for creative work, while the opposite of these favour, promote and nurture excellence[43-47]. In India, scientific research institutions are generally managed on principles of authority of the senior. Sometimes, the so-called seniors try to corner their juniors by imposing their authority on them, adding their own names as co-authors of the papers, standing in the way of promotion of talented people and, in general, suppressing merit; thus the whole atmosphere gets vitiated[9].

The respondents disagree that the environment in research institutions provides for enhancement of competence of junior colleagues. About 40% of the respondents feel that favourable environment in research institutions leads to recognition of good work. At the same time, 38% of the respondents perceive that environment in the research institutions does not discourage poor performance. About 44% of the respondents disagree that research institutions provide autonomy and independence and 35%

feel that the environment in research institutions promote congenial work relationship, almost the same number disagree with the statement (Figure 8).

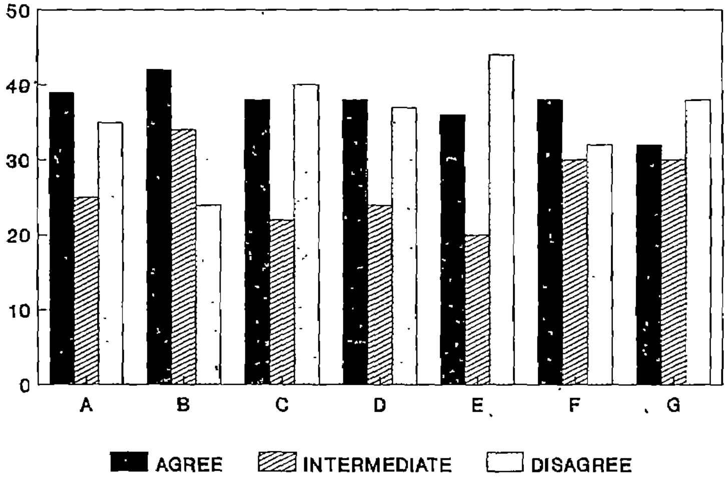

Fig. 8 : Perception of Scientists on Research Environment.

(A=Original & intellectually stimulating research; B=Establishment of linkages with other groups/Instt./users; C=Enhancement of competency of junior colleagues; D=Promotes congenial work relationship; E=Provides autonomy and independence; F=Gives recognition to good work; G=Discourages poor performance.)

Practices for Awarding Grants: It is often stated that multiple funding of research projects enhances competitiveness in the R&D system and usefulness of research project[43]. Identification of constraints inherent in the existing funding mechanisms may help in understanding the process of multiple funding. About 32% of the respondents feel that their institution did not encourage them to apply for research grants. Regarding the funding procedures, about 39% of the respondents agree that the procedures are cumbersome in their own institutes and about the same proportion agree that procedures followed in funding agencies are too cumbersome. Funding agencies are inflexible with regard to time target (about 30%), cost estimate (more than 33%), and technical content (more than 29%). In respect of the evaluation procedures for obtaining research grants, more than 33% of the respondents feel that evaluation is done on the basis of extra-scientific criteria rather than scientific criteria. A majority of the respondents (more than 55%) agree that right connections play an important role in decisions regarding research grants (Figure 9).

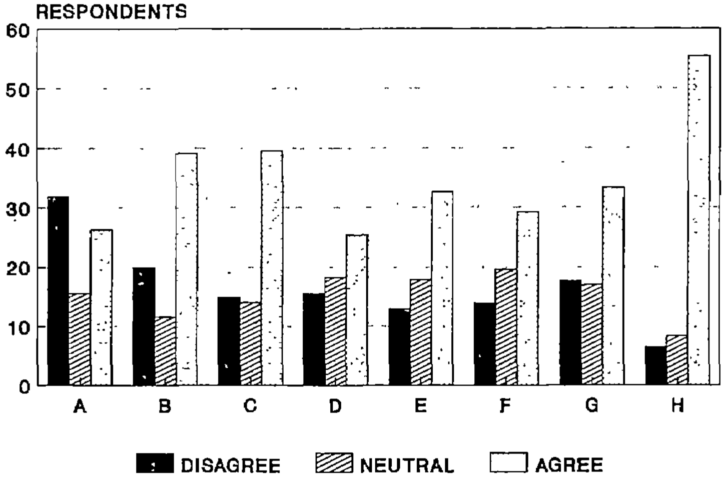

Fig. 9 : Respondents' Responses with regard to Procedures to Obtain Grants.

(A=Institute discourages applying for grants; B=Procedures are cumbersome within institute; C=Procedures are cumbersome within funding agency; D=Funding agency procedures are flexible with regard to time target; E=Funding agency procedures are flexible with regard to cost estimates; F=Funding agency procedures are flexible with regard to technical content; G=Evaluation on extra scientific criteria; H=Right connections help to obtain grant.)

Barriers to Interaction : scientific research is an information conversion process. During this process, information gathered is organised and synthesized. both formal and informal communication channels play a crucial role during this process. Studies undertaken so far have indicated that more than 50% of information is collected through interaction (personal, oral, and informal communication). Interaction also plays a crucial role in triggering ideas. Some studies have also indicated that factors such as hierarchical level, qualifications, distance, and professional and social relationships influence the communication network of a researcher significantly[49-53]. The preceding discussion reveals that as per the scientific perceptions, Indian scientists communicate freely neither with their immediate colleagues nor with fellow scientists outside the research institutions. It is in this context that an attempt has been made to identify the barriers to interaction in academic institutions, government research institutes, and industry.

S&T Personnel in Academic Institutions: About 64% of the respondents have identified lack of funds as a major barrier. About the same proportion feels that insufficient institutional support comes in the way of interaction. Opportunity cornered by seniors is the third most important factor, inhibiting interaction with S&T personnel in academic institutions. Social reasons, disparity in qualifications and professional rivalry are considered unimportant factors in this regard, the number of latter factors varies between 49% and 58% (Figure 10).

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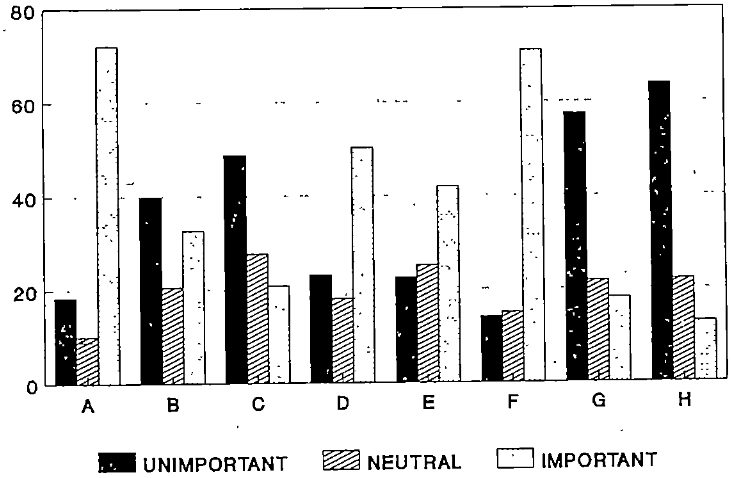

Fig. 10 : S&T Personnel in Academic Institute.

(A=Lack of funds; B=Lack of time; C=Professional rivalry; D=Opportunities cornered by seniors; E=Low weightage to interaction in reward system; F=Insufficient institutional support; G=Disparity in educational qualifications; H=Social reasons.)

S&T Personnel in Research Institutes: Insufficient institutional support is considered by about 58% respondents as the most important factor coming in the way of interaction with S&T personnel in research institutes. Lack of funds and opportunity cornered by seniors are the next important factors. Factors like, social reasons, disparity in qualifications, professional rivalry, and lack of time are considered as having no effect on the interaction of S&T personnel in Government research institutes (Figure 11).

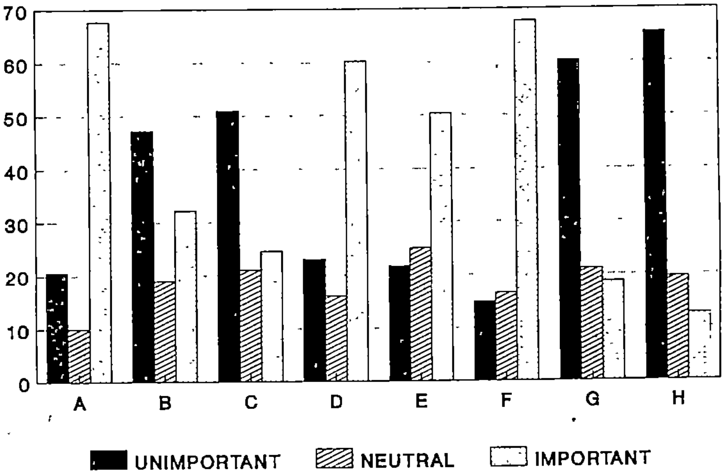

Fig. 11 : Factors Inhibiting Interaction Among Researchers.

(A=Lack of funds; B=Lack of time; C=Professional rivalry; D=Opportunities cornered by seniors; E=Low weightage to interaction in reward system; F=Insufficient institutional support; G=Disparity in educational qualifications; H=Social reasons.)

S&T Personnel in Industry : Respondents felt that lack of links with Universities, lack of resources to establish links with industries, low weightage to interaction in the reward system, lack of appreciation of their work in the industry and opportunity cornered by seniors are important factors impeding with S&T persons in industry. However, the respondents feel that social reasons and fear of ideas being stolen are unimportant factors and do not come in the way of interaction with S&T persons in industry (figure 12).

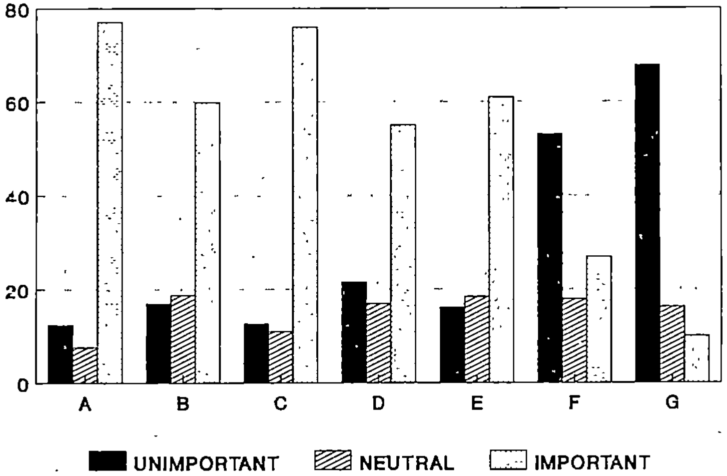

Fig. 12 : Interaction between S&T Personnel and Industry.

(A=Lack of link with industry; B=Low weightage in reward system; C=Lack of resources to establish link with industry; D=Opportunities cornered by seniors; E=Not enough appreciation of work in industry; F=Fear of ideas being stolen; G=Social reasons.)

Channels used: The pattern of channels used for meeting S&T personnel are same in the academic institutions, government research institutes and industry. The highest number of respondents meet S&T personnel at conferences. Among the institutional settings, the largest share of such respondents belongs to academic institutions(44%), followed by the government research institutes (36.6%), and industry (25.8%) (figure 13).

Meetings of professional societies form the next important channel of coming across S&T personnel. Across the institutional settings, the respondents from academic institutions (36.7%) claim the largest number of such contacts. This is closely followed by government research institutes (28.9%) and industry (12.5%). The other important channels are : current working relationships, heard about him/read about him and met via colleague contacts. Studied together and members of the community are the least tried channels for meeting S&T personnel.

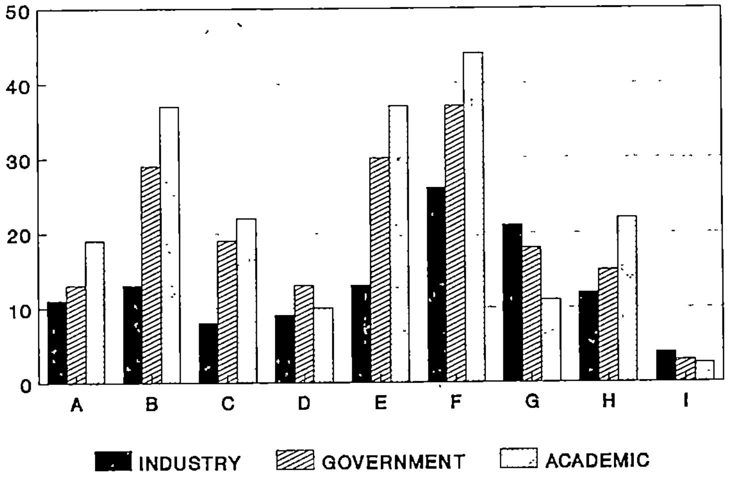

Fig. 13 : Channels Used for Meeting S&T Personnel.

(A=Met via colleagues contact; B=Current working relationships; C=Previously worked together; D=Studied together; E=Met through professional society membership/meeting; F=Met at a conference; G=Member of same committee; H=Heard about/read about; I=Any other.)

Impact of S&T on Socio-economic Objectives

With the institutionalisation and professionalisation of science and technology on resources as well as the demands of society on science and technology have come to be recognised. However, it is generally believed that Indian science and technology have not been able to contribute to socio-economic development to the desired extent. In fact, it is difficult to quantify the impact of S&T on socio-economic development because of direct and indirect linkages with various socio-economic activities. It is also difficult to visualize and map out all the linkages, specially since impact has a time frame.

As per scientists' perception, the first five most important objectives on which science and technology are considered to have made a major impact at present are : development of agriculture; exploration and resource assessment of earth and sea (including space research); industrial development; general advancement of knowledge; and national security. This pattern of impact evaluation has emerged because of political commitment and support given to these areas by the scientists and political support in terms of financial resource allocation made for various areas. The impact can be contrasted with the priorities set by the government for different socio-economic sectors. Development of transport and communication and socio-economic services have been given least importance so far and this policy is likely to continue in the future as well (Table).

Table: Impact of S&T on Socio-economic Objectives

Rank	Present	Future
First	Development of Agriculture	Development of Agriculture
Second	Exploration and Resource Assessment of Earth, Seas and Space Research & Industrial Development	Exploration and Assessment of Earth, Seas and Space Research
Third	General Advancement of Knowledge	Industrial Development
Fourth	National Security, Production, Conservation and Distribution of Energy	Production, Conservation, Distribution of Energy
Fifth	Protection of Environment, Development of Educational Services	Development of Educational Services
Sixth	Development of Health Services	National Security
Seventh	Development of Transport and Communication	Protection of Environment General Advancement of Knowledge Development of Health Services
Eighth	Social Development and Socio-Economic Services	Development of Transport Communication
Ninth		Social Development & Socio-economic Services

N=940
Source : NISTADS Surveys 1986, 1987

The perception about the future impact follows almost the same pattern as at present, implying that the scientists do not perceive shift in future science policy. However, national security, protection of the environment and general advancement of knowledge have been given less importance by scientists and engineers in their perceptions for the future in comparison to the present day perceptions.

Management of Indian Science : The performance of science and scientists depends upon the extent to which they are catering to the socio-economic needs of the country and the extent to which they are contributing to the world scientific knowledge. These in turn depend upon the efficiency with which the scientific institutions are being managed and the quality and quantity of the output of scientific research institutions in relation to the national needs and international standards. A majority of the respondents feel that the general image of science and relevance of science and technology to the national needs are better now in comparison to the situation prevalent ten years ago. Only 27% of the respondents feel that management of scientific institutions is now better than 10 years ago, while about 40% of them feel otherwise. About 48% of the respondents think that the output of scientific institutions in quantitative and qualitative terms is better than 10 years ago. Almost one third of the respondents believe that there is no change in the management of scientific institutions and their output in quantitative and qualitative terms (Figure 14).

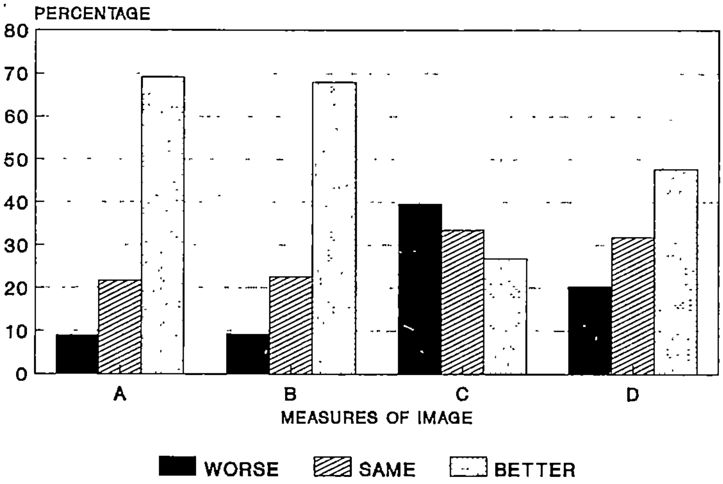

Fig. 14 : Management of Indian Science.

(A=Relevance to national needs; B=General image of Indian science; C=Management of scientific institutions; D=Output of scientific institutions in terms of quantity and quality.)

Conclusions and Policy Implications

The following general conclusions emerge from the foregoing analysis:

(i) The present survey confirms the findings regarding professional and behavioral norms of an earlier survey. The high level of dissatisfaction of respondents with regards to norms like Indian scientists working on creative and original ideas and Indian scientists evaluating the research work of fellow scientists essentially on its scientific merit is a matter of concern.

(ii) The respondents agree that career advancement comes by favoritism rather than by quality of work. As regards the criteria influencing the recruitment and assessment of S&T personnel, the respondents may feel dissatisfied because a few criteria like 'right' connections, loyalty to seniors and professional contacts are given more weightage than some of scientific criteria e.g. number of papers published in professional journals, professional experience and patents accepted.

In fact, acceptance of patents is given the least weightage not only during recruitment but also in giving promotion and recognition to S&T personnel. This could be one of the reasons why Indian scientific research is of little value or relevance to society. Higher weightage is being given to some of the criteria conducive neither to nurturing of excellence in science nor to promotion of applied research. There is a need to make our reward system transparent in order to promote a healthy and competitive environment in the research institution.

(iii) The perceptions of scientists regarding environment in research institutions are ambivalent. While the respondents on the one hand agree that the environment in the research institutions is conducive to development of linkages with the groups/institutions/users and doing original and intellectually exciting research work, they, on the other hand, feel that environment in the research institutions fails to discourage poor performance and also fails to provide autonomy and independence to research. The respondents are equally dissatisfied with promotion of congenial work relationship. This may be the main cause of overall dissatisfaction with prevalent environment in the institutions. There is a need to improve the environment in R&D institutions.

(iv) A majority of respondents are having sponsored projects. About two fifth of the respondents feel that the procedure followed in their institutions are cumbersome and about the same proportion agree that procedures followed in funding agencies are too cumbersome. Most of the research institutions discourage the scientists from applying for external funding. The funding agencies are more worried about routine aspects such as time target, cost estimate, etc. in comparison to the scientific and technical content of the research proposals. The respondents also fee that extra-scientific criteria such as right connections play an important role in award of grants. With these practices in vogue, one is likely to be sceptical about the quality of research proposals being funded by the agencies.

(v) The Indian scientists as per the perceptions of respondents communicate freely neither with their immediate colleagues nor with fellow scientists outside the research institutions. In addition, respondents are also not satisfied with interaction with S&T personnel may not leave enough opportunities for researchers to have interaction for the benefit of their research work.

(vi) Both the young and senior scientists are equally dissatisfied with the professional and ethical norms followed by scientific community, with recruitment, promotion and recognition of S&T personnel practices, with general environment prevalent in research institutions and appropriateness of existing criteria for assessment of a researcher.

(vii) Finally the scientific research in India needs to be vigorously supported and rigorously managed.

Acknowledgement

The authors are grateful to all the scientists who have responded to our questionnaires.

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Strengthening the Colleges of Teacher Education in India: An Appraisal Study*

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Introduction

Historically, it was exactly sixty years back that a distinguished Indian educationist, K.G. Saiyidain[2] (1934) exhorted: "Teachers' Training Colleges are in rather a curious predicament in the country". After thirty years of this observation, the *Report of the Education Commission (1964-66)* had to reiterate that "the quality of training institutions remains, with a few exceptions, either mediocre or poor. Competent staff are not attracted; vitality and realism are lacking in the curriculum and programme of work continues to be largely traditional: and set patterns and rigid techniques are followed in practice teaching, with a disregard for present-day needs and objectives". Inspite of the fact that a large number of commissions and committees have looked into the malaise afflicting the Indian education in the post-independence period, the "predicament" of the teacher's training colleges, as pointed out by Saiyidain, continues to haunt us, almost with the same intensity even today.

The teacher training institutions which are now being called "teacher education" institutions, have largely remained impervious to changes, which have otherwise taken place in the area of teacher education internationally (Gilroy and Smith, 1993). Nothing better would substantiate this situation than the observation recorded in the Ministry of Human Resource Development (MHRD), Government of India, document *Programme of Action (1986)* which stated that :

> There are at present about 1200 institutions for training of elementary school teachers and about 360 colleges for preparing secondary teachers. A large number of these institutions suffer from inadequate facilities - human, physical and academic to provide good professional education. Curricula remain unrevised for years, reading lists out of date and practices adopted by teacher educators in direct contradiction to ones being prescribed to prospective teachers. (p.187).

One may notice the excellent and perfect continuity in the observations of Saiyidain (1934), *Report of the Education Commission (1966)* and *Programme of Action (1986)*. Making these observations as a basis, it may be concluded that nothing major really seems to have changed in the teacher training scene during the past sixty years or so. If Saiyidain was to take a rebirth today, and be posted in a teacher's training college, he would find himself in familiar environs!

The purpose here, of course, is not to look for or probe into the reasons or even to castigate, as to why teacher training and its institutions, unlike other professional areas such as medicine, engineering and management which have undergone a sea-change in the post-independence period, have largely remained resistant to change. The broad purpose here is to make a critical analysis of the existing conditions of teacher training institutions, and most importantly, the measures that have been taken to improve their condition. It is visualised that, possibly, realising the gravity of the situation, the formulators of the *National Policy on Education (1986)* very rightly observed that "as the first step, the system of teacher education will be overhauled" (added emphasis authors). It is to be further seen that unlike the earlier policy statements, this theoretical proposition of "overhauling" the system of teacher education in the country, was operationalized in the document *Programme of Action (1986)*, wherein there is a detailed mention of the various centrally sponsored initiatives to raise the status of teacher education in the country. Such a measure to really improve the state of affairs, may be the first conscious step in the recent history of teacher education in this country. Amongst the various centrally sponsored initiatives of teacher education namely the Strengthening the Colleges of Teacher Education (SCTE), is an important scheme to up-grade the stature of a good number of "slick" secondary teacher training institutions in the country.

Strengthening the Colleges of Teacher Education: The Vision

The centrally sponsored scheme of Strengthening the Colleges of Teacher Education (SCTE) owes its genesis primarily to the fact that: "A large number of colleges of education suffer from inadequate facilities - human, physical and academic - which are essential for sound professional education. Laboratory and related equipments are not available; libraries are ill-equipped. There are no effective arrangements for practice teaching in actual environment. These facilities are too inadequate to prepare teachers" (*Programme for Improvement of Secondary Teacher Education Institutions : Salient Features and Guidelines for Project Formulation, 1987, p.1)*.

Besides providing for the necessary physical facilities to augument the chronic shortages of infrastructural facilities in the Colleges of

Teacher Education (CTEs), the scheme also visualized that such upgraded CTEs should be in a position to perform many other additional responsibilities such as, organizing in-service programmes for teachers and also conducting research studies. These additional roles could be seen in tandem with the *National Education Policy* (1986) formulation which visualized that : "Teacher education is a continuous process, and its pre-service and in-service components are inseparable". As such, the Colleges of Teacher Education (CTEs) which would be the beneficiaries of such a central assistance, would have to get involved in multifarious activities and not remain solely engaged in the training of pre-service teachers. Specifically, the following functions were visualized for the upgraded Colleges of Teacher Education *(Project Formulation Document, 1987, p.9) :*

1. to organise pre-service teacher education courses for preparation of secondary teachers.
2. to organise subject-oriented (3-4 weeks duration) and shorter, theme specific (3-10 days duration) in-service teacher education programmes for secondary teachers, with a view to making every teacher undergo atleast one subject-oriented training course every 5 years, apart from shorter, theme specific courses.
3. to provide extension and resource support services to secondary schools, school complexes and individual teachers.
4. conduct experimentation and innovation in school education.
5. to provide training and resource support for the new areas of educational concern, e.g. value-oriented education, work-experience, environmental orientation of education, population education, educational technology, computer literacy, vocationalization and science education.
6. to provide support to professional bodies.
7. to encourage community participation in teacher preparation programmes.

Commensurate with the above additional roles and functions, the scheme worked out the pattern of central assistance to each CTE which involves recurring and non-recurring expenditure to the tune of Rs.6.65 lakhs and Rs.48 lakhs, respectively. The details of the expenditure are provided in the *Project Formulation Document (1987).* It was further visualised that each CTE would have adequate academic faculty comprising of one Principal, three Readers and thirteen Lecturers. The funds were to be made available for the new posts and for up-gradation of existing posts. It was further pointed out that the expenditure for these additional academic positions would be provided under the scheme during the Eighth Five Year Plan Period.

It was during the years 1987-88 that the six institutes of secondary teacher education were upgraded as Colleges of Teacher Education (CTEs). Subsequently, the Ministry of Human Resources Development (MHRD), Government of India, sanctioned sixteen more CTE's during the year 1991 - 92. As such, up to March 1992, thrity-one secondary teacher training institutes were up-graded as the Colleges of Teacher Education (CTEs). In order to see if the Colleges of education so upgraded were trying to actualize the objectives as outlined in the *Project Formulation Document (1987),* this study would try to make an attempt to broadly see to what extent they have been successful in realizing their additional goals.

Purpose of the Study

The purpose of the present study is to make a critical appraisal of the functioning of those Teacher's Training Colleges which were upgraded as Colleges of Teacher Education (CTEs) under the centrally sponsored scheme of teacher education. Specifically, an attempt has been made to make an appraisal of their functioning (in quantitative terms only) in respect of two major functions such as : to organise in-service teacher education programmes for secondary teachers and to conduct experimentation and innovation (researches) in school education. The appraisal as it relates to these two functions has been done keeping in view the faculty position, teacher-pupil ratios and the financial outlays.

Method

This study is essentially based on the information that has been provided in the document *Profiles of Colleges of Education (Gupta, 1993),* a publication of Department of Teacher Education, Special Education and Extension (DTESE&E), National Council of Educational Research and Training (NCERT). Outlining the rationale of his study, Gupta (1993) pointed out that his study may 'reveal the milestone covered by CTEs to realise the objectives for which they have been set up'. However, a major limitation of Guptas' (1993) study is that the findings of the study have not been put in a broader perspective of the state of teacher education in the country. Additionally, no significant attempt has been made to draw implications in terms of the further implimentation and monitoring of this important scheme. As such, the present study has aimed to fill these important gaps and has made a critical analysis of the implementation of scheme highlighting the possible implications for the future.

Sample

This appraisal study is based on the responses received from the 25 Colleges of Teacher Education which were given financial assistance under this scheme upto the December 1991 end. Of the 25 Colleges of Teacher Education sanctioned 22 (or 88 percent) Colleges responded by providing information of various kinds during the year 1992 - 93. Table 1 provides state - wise distribution of the CTEs. The CTEs, it may be pointed out, were in their existence " for more than two years" (Gupta, 1993) when the information was collected from them.

Out of the 22 Colleges which responded, two were located in the University departments, sixteen were Government Colleges and four were privately managed laided institutions.

Table 1

State-wise Distribution of CTEs in various States

State	No. of CTEs Sanctioned	No.of CTEs Responded
Assam	3	3
Gujarat	5	4
Kerala	1	1
Maharashtra	4	3
Orissa	3	3
Punjab	2	2
Rajasthan	2	1
Tamil Nadu	5	5
Total	25	22

Tool

A Questionnaire 'Where are we' was developed by Gupta (1993) to collect information regarding the various aspects of the functioning of CTEs during the year 1992-93. This Questionnaire based on the document, *Programme for Improvement of Secondary Teacher Education Institutions - Salient Features and Guidelines for Project Formulation (1987),* solicited information regarding various aspects such as, institutional position, background of the Principal and faculty, building, pre-service and in-service teacher education programmes offered and researches conducted and finances sanctioned and utilized.

Findings

The two major objectives of this appraisal study were to find out the performance of the sample CTEs in terms of the number of in-service programmes that they had organized and also the educational researches that they had carried out during the year 1992-93.

In-service Training Programmes Organised

Information about the number of Inservice training programmes organized by the 22 CTEs along with the number of participants who had attended these programmes is presented in the following Table :

Table 2

Number of In-Service Programmes organized and the researches conducted by the CTEs

Name of the College	Researches conducted	Training Programme Organized	Number of Participants
CTE, Dibrugarh, Assam	-	10	363
CTE, Jorhat, Assam	-	-	-
CTE, Kokrajhar, Assam	-	-	-
CTE, Ahmedabad, Gujarat	-	-	-
CTE, Valsad, Gujarat	-	-	-
CTE, Kheda, Gujarat	-	-	-
CTE, Sabarkantha, Gujarat	-	-	-
CTE, Kozikode, Kerala	-	1	30
CTE, Raigarh, Maharashtra	-	-	-
CTE, Kolhapur, Maharashtra	-	-	-
CTE, Balasore, Orissa	-	7	232
CTE, Bolangir, Orissa	-	-	-
CTE, Dhenukanal, Orissa	-	14	429
CTE, Faridkot, Punjab	-	-	-
CTE, Patiala, Punjab	-	9	262
CTE, Jodhpur, Rajasthan	1	9	177
CTE, Orathanadu, Tamilnadu	-	-	-
CTE, Salem, Tamilnadu	-	-	-
CTE, Pudukkottai, Tamilnadu	-	1	57
CTE, Vellore, Tamilnadu	-	1	60
CTE, Coimbatore, Tamilnadu	-	-	-

Table 2 reveals that of the 22 CTEs, only 8 or 36 percent CTEs organized some in-service programmes, reaching out to a total of 1973 participants. Results further reveal that of the 8 CTEs who organized these in-service training programmes, only 5 CTEs organized a minimum of 7 to 14 programmes while the remaining three had just organized one programme each.

A further perusal of the data relating to the In-service training programmes provided in the document *Profiles of Colleges of Education* (Gupta, 1993) shows that the in-service training programmes (which were mostly related to teaching of various school subjects) organised by the CTEs were of durations ranging from 1 to 10 days. In absence of any further specific information, it is difficult to speculate whether these training programmes were related to conduct enrichment or pedagogical processes or covered both the aspects. Out of the 8 CTEs, only one CTE had organized a training programme for the Elementary teacher educators.

Researches Undertaken

The position of researches conducted by the 22 CTEs is also presented in Table 2. It is clear that only one CTE undertook a research study. A perusal of Gupta's (1993) report indicates that this research has been conducted on 'Study on work load in DEO offices', which as such is not related to classroom processes but is related to educational administration and supervision.

Discussion

The findings of this appraisal study are discouraging, dismal and ndeed ironical. It raises serious questions about the effectiveness and mplementation of this centrally sponsored scheme as it relates to: organization of in-service training programmes and conducting and undertaking research activities. If one looks at the expectations that were envisioned in the *Project Formulation Document (1987)* regarding he organization of the in-service programmes, one finds that "it was expected that a CTE/IASE would be able to conduct about 16 such ourses every year, with about 40 participants per course. The courses may be organized two at a time, thus having about 80 in-service participants in the institution at a time". It may be further pointed out that it was envisioned in the scheme (1987) that the in-service programmes to be organized may be mainly of two types:

1. Subject-oriented courses mainly covering content-cum-methodology in common school subjects, of 3 to 4 weeks duration; and
2. Shorter, theme specific courses of 3 to 10 days duration.

It is both in terms of the number of the courses organized and participants trained, as well as the nature of these courses that the performance of these CTEs falls miserably short of the expectations. The situation in case of the research output is outrightly hopeless with just only one CTE making a humble attempt in this direction!

These findings force one to look for reasons for such a pathetic performance by the CTEs on these two counts. After all why has such a debacle taken place? If one tries to probe further into the performance of the sample CTEs in the context of other factors such as the faculty in position, the teacher-pupil ratio (for the pre-service training programmes) and the budgetry allocations etc., one finds that these institutions are somewhat happily placed on these counts. Looking at the data provided in Guptas' (1993) document, one notices that excepting for a few colleges, the faculty position is as per the allotted strength of the colleges. The average teacher-pupil ratio is a comfortable 1:15 and the allotted budget ranges from Rs.5.8 lakhs to Rs.70.5 lakhs which most of the CTEs had utilized. Added to these positive indices is the fact that almost fifty percent of the sample CTEs are Post-Graduate Colleges of Teacher Education, offering M.Ed, courses and three of the CTEs are offering even Ph.D. programmes. In other words, it speaks volumes for the supposedly greater academic and professional competence of the fifty percent CTE institutions with no concommitent effect on the general performance of these CTEs in terms of the two major functions delineated above.

It is a matter of great surprise that while the fifty percent CTEs are Post-Graduate Colleges and some of them are offering even Ph.D. programmes, educational research studies is so dismal. One can, however, find some argument for their not doing research as it has been found that "it is not only towards greater professional productivity and research, but is equally true of many other developing countries" (Raina, 1993). Making an explicit reference to the neglect of research in teacher education institutions, UNESCO (1992), report of a *Regional study Group Meeting on Teacher Education* in which about twenty countries participated observed that teacher education in these countries seemed to thrive more on "encyclopedia of mythologies", rather than "encyclopedia of knowledge", largely because teacher educators are hardly pursuing any research. If further observed, that while there is a general recognition of the need to encourage teachers to do action research, in many countries there is no effective system to motivate teachers to do so. Research has remained the weakest component of teacher education programme of all the participating countries. However, for the sake of its historicity, it may be relevant to point out that it was almost forty years back that the *Report of the Secondary Education Commission (1955)* rightly pointed out. "One aspect of the training colleges should not be lost sight of. The training colleges should in essence be not merely a college for training teachers, but an institution for research work in all aspects of pedagogy". The fact, however, remains that even after forty years of this significant observation, we continue to elude this goal. Why has it been so?

The overall findings of this study lead one to advance a hypothesis that, possibly, the faculties of these CTEs have as yet not 'cognitively' reconciled to the additional roles that they are expected to perform. While these institutions have been strengthened infrastructurally, possibly the faculties, by and large, may not be fully motivated and professionally equipped to perform the additional roles. Since their long standing existence, they have traditionally been tuned to be involved only in pre-service teacher preparation programmes, "which in actual practice, works out to be 7 to 8 months duration in most States because of several factors over wich teacher education institutions, as such, seem to have little control *(Project Formulation Document, 1987)*. This practically would leave most of the faculty idle and free for a long time. Over a period of time, the faculties in these institutions, seem to have internalized a role function which by its very nature would not demand stremous looking schedule. This has. by and large, turned them into "one-dimensional" pedagogues (Raina, 1994) with a sense of despondency. As such, a great deal of motivation which, of course, has been provided extrinsically (up-graded faculty positions) is surely intrinsically non-existent in these teacher educators. Added to this is the fact, as Raina (1994) observed that "teacher education is the only professional field in which deadwood has never been considered a hindrance". It is possibly these factors which have prevented the teacher educators from contributing actively to their added roles and functions.

It would indeed be uncharitable to blame only the teacher educators for the above "predicament". Our experiences have shown that most of the teacher educators, once they have joined a college of education, hardly ever get an opportunity to get their antiquated knowledge and pedagogical skills renewed. It is in this context that Raina (1993) has pointed out that :

> It is an anachronism that while provisions do exist for the professional development of the academically better off University teachers - including the faculties of the Departments of Education, in the recently established Academic Staff Colleges (ASCs) set up by the University Grants Commission, no such provisions exist for the intel-

lectually improverished faculties of the teacher training institutions. Considering even for a while that the same facilities are extended to the teacher educators, it is doubtful if the programmes, as are being presently offered by the ASCs, would be of any use to the teacher educators. There is an absence of a coherent policy and programmes for the professional development of the teacher educators. (p.13)

Implications for Future

The findings of this study have important implications for the evaluation and monitoring of the performance of up-graded Colleges of Teacher Education (CTEs). While the *Project Formulation Document (1987)* has very clearly highlighted the need for the preparation of a 'perspective plan concerning all its functions for the area to be served by it' and also to 'prepare its 5 year and annual institutional plans', what the CTEs are really doing on this count, is a matter of speculation and further verification. In addition to the preparation of annual and five yearly plans, the *Project Formulation Document (1987)* had also very clearly visualized that in terms of their accountibility, " the institution would be answerable to the State Government (which in turn may assign this responsibility to State Council of Teacher Education, and/or to SCERT), which will continuously monitor and evaluate the formers work in the context of its perspective and institutional plans". One really doubts whether such a responsibility is being shouldered by the concerned departments, or else there would not possibly have been such a dismal position. There is an urgent need to make the functioning of the proposed Programme Advisory Committee (PAC) of these CTEs *(Project Formulation Document, 1987)* a reality and thereby ensure that these CTEs are "able to perform their role and conduct programmes in the most effective manner".

To conclude, one may fully well agree with Seshadris' (1993) pertinent observation that:

> *Nor should one expect massive resource funding for buildings, equipments and posts, by itself to work wonders. A state of readiness to receive and assimilate the resource inputs into the system is a prerequisite. What do we do with all the sophisticated computer and educational technology support when we simply do not have the 'mental' and physical readiness, not to mention the trained manpower, to put them to use? What do we do with all the programme funds when we do not have the men to conceive programme ideas, to formulate and deliver the programme? (p.11).*

To do so, it becomes almost essential for the implementors of such centrally sponsored schemes to give prior and adequate thought to making the faculty in these Colleges 'mentally ready'. This may have to be done by organizing a good number of awareness programmes about the mechanics of organizing in-service training programmes and also developing adequate competence in relevant research techniques and skills. If we fail to do so, we may invite the risk of seeing ourselves in a situation which parallels, to use the popular American adage 'throwing money at the problem" and thereafter hoping that the problem would get solved by itself !.

Notes

*1. In pursuance of the National Policy of Education (1986) certain centrally sponsored schemes of Teacher Education were formulated. It may be added here that 'centrally sponsored' means that the total funding of such schemes would be provided by the Federal Government at New Delhi. Under the scheme of Strengthening the College of Teacher Education (SCTE, 1987) it was planned to upgrade two hundred and fifty Teacher's Training Colleges. This funding would come from the Ministry of Human Resource Development (MHRD), Government of India on various items such as computers, audio visual equipment, library and furniture. Provision exists for the one time grant to the each CTE for the construction of building, hostel and staff quarters. Gupta (1993).

2. When Saiyidain made this observation, he was Professor of Education and Principal, Teacher's Training College, Aligarh Muslim University (AMU), Aligarh. After independence he rose to become the Educational Adviser to the Government of India and acted as a member of the important Commissions on Indian Education, Secondary Education Commission (1952-53) and Education Commission (1964-66). Saiyidain was also a Member of the Task Force on Teacher Education and Teacher Status of the Education Commission (1964-66).

3. The participating countries were : Bangladesh, China, India, Indonesia, Iran, Lao People's Democratic Republic, Malaysia, Maldieva, Myanmar, Nepal, Pakistan, Papua New Guinea, Philipines, Republic of Korea, Western Samoa, Sri Lanka, Thailand and Vietnam.

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Improvement of Standards —An abiding concern of the UGC

S.P. GUPTA

The UGC was established for the promotion and coordination of University education as well as for the determination and maintenance of standards of teaching, examination and research. What quality or standards of education mean is, however, a matter very much of judgment. As in the past, at present also, there is general criticism of the quality of education, based on value judgment. Often, people say that standards are falling. When it is pointed out that this is not true for a number of subjects, the criticism gets moderated. To move away from a predominently subjective approach and take appropriate remedial measures for raising standards wherever these were considered necessary on the basis of objective assessment, the UGC set up in 1961 a Committee on Standards - under the chairmanship of Prof. N.K. Sidhant, Vice-Chancellor, Delhi University. Dr. Sidhant passed away in December 1961 and then Shri Govindarajulu, Vice-Chancellor, Sri Venkateswara University, headed the Committee, which submitted its report in 1965.

The UGC Committee on Standards, 1965

This Committee began its work by addressing itself to the fundamental issue of whether it was at all possible to apply any constant unit of evaluation in respect of education. It was contended that since knowledge keep growing at an explosively rapid rate, it was difficult to evaluate it by either constant or wholly objective criteria.

The dynamism inherent in the educational processes, therefore, required the adoption of a dynamic system of evaluation in which performance would be evaluated against norms liable to change with the state of knowledge.

Can examination results give us a picture of the changing situation in terms of the rise and fall of standards? One cannot take a categorical position in this regard because of two limitations: firstly the methods of marking scripts and evaluating the performance of students are not sufficiently reliable, and secondly, if marking is assumed to be accurate, and the variations not only between universities but also between one faculty and another in the same university create distortions which render the task of working out all-India averages highly unreliable and hazardous.

Even if the question of evolving a standard yardstick for all faculties and all universities is left alone, one still has to face up to the challenge of appraising whether our graduates fulfil the expectations of the society in general and the employers in particular. This has to be viewed in the context of the aims of a university education which requires not only the importing of work oriented skills to students but is also concerned with proposing them to become useful members of society. Another way of approaching the problem of standards is to ascertain whether the intellectual and other potentialities of students are adequately utilized and developed in the universities and colleges. The output of research work is another useful index for judging how far universities are able to develop in their students the capacity to undertake original and creative work.

The Standards Committee of the UGC came to the conclusion that "It cannot be said that there has been an overall deterioration in standards" The committee identified the areas in which standards had been adversely affected and suggested the ways by which remedial action could be taken through appropriate measures relating to admission policy, courses of study, improvement of teaching, medium of instruction and examination reform. As regards maintenance of standards, the Committee held the view that the aim of the UGC should be to raise the levels of university education, firstly, to the highest standards obtaining in India and secondly, to the maximum attainable in comparison to international standards:

In 1965, the committee said: "we know that the University Grants Commission has addressed itself to this immense and difficult task and much has already been done. While it is true that in the expansive situation prevailing in the field of higher education in India, the pursuit and realisation of excellence cannot be a universal phenomenon, is possible of attainment in limited areas and our efforts have to be directed to extending the boundaries of these areas as well as raising the heights of the peaks. The Commission's programmes should therefore have both a horizontal and a vertical dimension and it is in the constant upward and outward moving of these limits that standards can be improved in the universities in India."

Education Commission

The Report of the Education Commission (1964-66) provided a comprehensive picture of the state of education in India and underlined its importance for national development, making recommendations for its growth and improvement. Prof. D.S. Kothari, the Chairman, in his letter to the Minister of Education, while submitting the report wrote:

> "Education has always been important but perhaps never more so in man's history than today. In a science based world, education and research are crucial to the entire developmental process of a country, its welfare, progress and security. It is characteristic of a world permeated by science that in some essential ways the future shape of things is unpredictable. This emphasizes all the more the need for an educational policy which contain a built-in flexibility so that it can adjust to changing circumstances. It underscores the importance of experimentation and innovation. If I may say so, the single most important thing needed now is to get out of the rigidity of the present system. In the rapidly changing world of today, one thing is certain: yesterday's educational system will not meet today's, and even less so, the need of tomorrow".

Recommendations

The main recommendations of the Education Commission (1964-66) with regard to the improvement of the quality of education were:

1. Introduction of work experience (which includes manual work, production experience, etc.) and social service as integral parts of general education at more or less all levels of education;
2. Stress on moral education and inculcation of a sense of social responsibility. Schools should recognize their responsibility in facilitating the transition of youth from the world of school to the world of work and life;
3. Vocationalization of secondary education;
4. Strengthening of the centres of advanced study and the setting up of a small number of major universities which would aim to achieve the highest international standards;
5. Special emphasis on the training and quality of teachers for schools;
6. Education for agriculture and research in agriculture and allied sciences should be given a high priority in the scheme of educational reconstruction. Only energetic and imaginative steps would attract a reasonable proportion of talent to go in for advanced study and research in the agricultural sciences;
7. Development of quality or pace-setting institutions at all stages and in all sectors,

Vice-Chancellors Conference, 1967

In the Vice-Chancellors Conference of 1967, a lot was said about the quality of education and the switch-over to Indian languages as media of instruction. Dr. Triguna Sen, the Minister of Education categorically reaffirmed his commitment to the quality of education. He stated that:

1. We must remember that, first and foremost, our loyalty is to good education or to the maintenance of standards, because the contribution of education to national development depends essentially upon its quality.
2. Language is, after all, a tool for education and not an end in itself. Therefore, while a language policy is an essential ingredient of a national policy on education, it would be a grievous error to equate this part with the entire policy itself.
3. The language problem in education is difficult and surcharged with emotion. But we cannot hope to solve it by keeping mum or by running away. That way lies danger and chaos. What we need is an early communication of a long term policy carefully devised on the basis of the best knowledge we have and in a spirit of give and take so essential to the federal democracy which we have given to ourselves and its implementation in a vigorous and sustained manner.
4. There should be no antipathy against any language, even the language of our enemies - past and present. In fact, we have to study more world languages in future and to study them in a more intensive way. Our objective is to get all knowledge, created in any part of the world, and in any language.
5. We have to preserve and strengthen the gift of English. But let us not forget that English has unfortunately assumed, out of sheer historical accidents, two widely different roles in our midst. I welcome that English which serves me as a window on the world and helps me enrich the language of my country. But, I have no use for that English which alienates me from my own people, makes 98 per cent of my countrymen foreigners in their land of birth 'and has become the status symbol of a privileged and exploiting class.'

Prof. Kothari was however more emphatic on the use of Indian languages in education. He held the view that we must give to our languages a place of high honour, the first place, in the scheme of things. We must get rid of any complex about English but use it as an instrument of educational development and international communication. The desirability and success of a medium of education should be judged 'in terms of the contribution it makes to raising the quality of education.'

Thus, the place of the medium of education was relegated to that of a mere instrument for raising the quality of education and also its growth since, as Prof. Kothari said, "The most powerful instrument (or rather engine) to meet the challenge of poverty and deprivation, and of the widening gap between rich and poor within the country, and between countries, is education and research. We need better and more education deliberately linked to national goals and needs. The basic elements of a rising spiral of prosperity are education and technology, and constitute a rather intangible (but very important) X-factor which depends on national heritage and character."

The Education Commission projected an educational picture of what it would be like in 1986. The report urged that by 1986 illiteracy should positively be eradicated as a step vital to industrialisation and the development of agriculture. Pursuit of quality and excellence at all levels and in all sectors, whether it be education of scholars or peasants and artisans was greatly stressed by the Commission.

Vice-Chancellors Conference, 1975

In 1975 a Conference of Vice-Chancellors was convened by the Ministry of Education and the U.G.C. after a gap of six years. The Conference assessed the state of affairs of higher education in India. On this occasion, Professor Satish Chandra, the then Vice-Chairman of the UGC intimated that the UGC had forwarded a number of programmes aimed at the regeneration of higher education in India. He also said that efforts had been made: to regulate admissions; raise standards; modernise the syllabi and make these more relevant for our social and national needs; carry out reforms in the existing system of examinations; and promote fundamental research while laying due emphasis upon the applied and developmental aspects. In his view the revised pay scales provided another favourable opportunity for inducting more qualified and competent staff into the university institutions and raising the standards of the existing teachers for the fulfillment of these tasks.

Prof. S. Nurul Hasan, the Minister of Education, Social Welfare and Culture however, sounded a note of skepticism when he said

> "The University system has had a great deal of unplanned and uncontrolled expansion ...... which could have been avoided. While standards have improved in some respects, they have gone down in others and there has been a large increase in sub-standard institutions of small size which are academically non-viable. Student motivation has deteriorated, partly due to indiscriminate admissions and partly because of growing unemployment."

Professor Nurul Hasan summed up the situation by saying tha "Quality is the essence of higher education and unless standards are kep continuously under review and raised from time to time, to meet the growin national needs, the university system will not be able to achieve its goals But higher education of good quality is necessarily costly and no countr in the world is rich enough to provide it in an unlimited measure. I India, where we have to face extreme financial stringency and competin claims from other priority programmes, it will not at all be possible fo us to follow a policy of open-door expansion of higher education and ye maintain standards at adequate levels."

A New Policy Frame

In 1978, the UGC brought out a policy frame for the developmen of higher education in India over the next ten to fifteen years. It define the standards of education in the wider sense of the word viz. all-side development of the personality of the individual and his continuin commitment to social objectives. It opined that "the system of doubl standards in educational institutions — one for the rich and well-to-do an the other for the large majority of the people — should be done away with It is true that the maintenance and improvement of standards would nee physical inputs, such as good teachers and better learning tools an facilities, but they depend more basically on discovery and cultivation o talent and the creation of a climate of dedicated hard work in all educationa institutions." It suggested that the UGC should play an increasing rol in promoting high quality research in universities because of the symbioti relationship between teaching and research. Besides, it must also promot applied research which has an immediate impact on social and economi conditions of the people.

Improvement of research — a new outlook

The "UGC's Policy and Programme for Improvement of Research i the Universities" (1984) overviewed the Commission's role and activitie with regard to standards of education and research. It also indicated furthe activities designed to the improvement of standards. It mentioned, fo example, the Regulations regarding the qualification of teachers, th guidelines for minimum examination reforms and the advice to th universities that the number of days on which classes are held shoul not be less than 180 days. The Commission had already been pressin for the modernization of syllabi and method of teaching which require students to do assignments, tutorials, project or field work etc. — exercisin their own initiative and creativity. In order to help teachers improve thei competence, Journals of Education in Physics, Chemistry, Mathematics an

Biology were started by the UGC apart from assigning minor and major research projects to teachers and giving teacher-fellowships and assistance for attending conferences.

Besides the above, other aspects emphasised included:

1. enlargement of research base to meet the needs of researchers and teachers without compromising with excellence;
2. increased emphasis on theoretical as well as experimental object work, particularly at the postgraduate level;
3. introduction of a National Test for admissions to research programmes (the NET was started in 1984 itself) and also of the test for the eligibility of lectures; and
4. increase of the emoluments and amenities provided to the research scholars;
5. creation of a cadre of Research Scientists to attract talent for research work in all subjects.

National Policy on Education (1986/1992)

The Programme of Action 1992 on the National Policy on Education (1986, Revised 1992) observed that the university system should move to the centre stage. It should utilise its autonomy for innovations in teaching and pursuing high quality research. It laid great emphasis on autonomy of colleges and departments, provision of means to interact across the boundaries of institutions and funding agencies, better infrastructure, more rationalised funding of research and integration of teaching, research and evaluation.

The 1992 POA listed a number of achievements of the UGC with regard to the raising of the quality of education and research. These included:

1. revision of payscales of university and college teachers;
2. introduction of an eligibility test for the recruitment of university and college teachers;
3. establishment of 48 Academic Staff Colleges for organising orientation and refresher courses;
4. conferment of autonomous status on 86 colleges;
5. development of model curricula in 27 subjects in Science, Humanities and Social Sciences.

The POA also stressed that higher education programmes will have to be redesigned to meet the growing demands of specialisation, provide flexibility in the combination of courses, facilitate mobility among courses, programmes and institutions, update and modernise curricula, integrate work/practical experience and participation in creative activities with the learning processes, and facilitate reforms in the evaluation procedure.

National Assessment and Accreditation Council

In pursuance of the National Policy of Education, the UGC has set up a National Assessment and Accreditation Council (NAAC), as an autonomous body, for the maintenance and coordination of standards in higher education. Any institution which desires accreditation will be assessed by the NAAC for either institutional accreditation or programme assessment. Assessment and accreditation will help institutions to identify their strengths and weaknesses, and promote a culture of positive competition. In other words, it aims to stimulate self-evaluation and improve feedback within the system.

It is expected that the NAAC will play a supportive role in UGC's efforts for the coordination and maintenance of standards in higher education by sharing information related to assessment and accreditation of institutions. The UGC too will be able to draw upon the database of the NAAC for the formulation and implementation of policies and programmes for the development of universities and colleges in the country. NAAC's reports will also be useful to the funding agencies in knowing the profile of institutions and the relevant patterns of assistance. These reports might also be used for the cost-benefit analysis of the expenditure of higher education and the provision of incentives to outstanding institution.

All said and done, it is apparent that right from the very beginning, UGC has been pursuing improvement of standards and, one must admit, that not a little has been done though what has been achieved is not much. Though several reasons are given for unsatisfactory achievement, the most important is the unplanned growth of institutions. Universities and Colleges are opened at the sweet will of the governments and private donors. The UGC does not give them grants until they create a certain level of facilities by themselves. Yet, the process has resulted in low standards in nearly fifty per cent of universities. Opinion is divided in the educated community regarding the standards and quality of education. It has all along been felt that the country has reached a reasonably good level in science and technology, not merely in the number of graduates but also in the standards. Our products are accepted for employment in India and other countries, including the developed ones. But one cannot say the same for the graduates of other subjects. Of course, the standards vary from institution to institution and from subject to subject. Nevertheless, one cannot but draw the conclusion that not much has been achieved until now.

As a matter of fact, attention is beginning to get focussed on a serious cause for concern. In the last few years, there has been a decline in the standards of technical education because of an explosion in the number of private engineering colleges. In addition, science education in colleges and universities too is undergoing a decline owing to non-availability of modern laboratory equipment. Most schools in the country have hardly a laboratory worth the name. Consequently they provide science education of sub-standard quality. When the school-products go up to the colleges, their education is weakened further due to the weak infrastructure for science education in most colleges. Infrastructural weaknesses persist even in postgraduate education as well as research studies.

The UGC's efforts for improving the quality of research has borne some fruit, but, of late, the base of science research viz. education itself, is being eroded. Extraordinary efforts are required to arrest the decline. Experience tells us that it is an uphill task to improve the standards of education, especially those of science education, in a vast system like that of India with the present resource constraints and a conventional approach to problem solving.

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Curriculum for Orientation Programs in Higher Education

B. K. PASSI AND RAJENDRA PAL

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1. Introduction

This paper gives a brief historical scenario of preparing of teachers of higher education and also the current features of curriculum development approaches being used in the existing professional orientation programs. The views of participants of selected Academic Staff Colleges (ASCs) about their likings and preferences for the prevalent topics and themes of the curriculum of orientation program are also included.

2. Historical Scenario

This paper gives two aspects of the historial scenario of professional orientation of teachers of higher education, viz, first the policy perspectives for training of teachers at higher stage, and the second, the development of curriculum for professional preparation of teachers of higher education.

2.1 Policy Perspectives

The scenario of orientation programs for teachers of universities and colleges is rather new, but almost all the committees and commissions set up after independence, have laid stress on the need for the professional preparation of teachers of higher education. A brief review of observations and recommendations regarding professional development which also give the directions for curriculum formulation are :

Kothari Commission 1964-66 : The report of the Education Commission suggested that : (i) newly appointed lecturers should be given some time to acclimatize themselves to the institutions and should be encouraged to attend lectures of good teachers; (ii) regular orientation courses for new staff members should be organized in every university and, where possible, in every college; and (iii) in the bigger universities, or groups of universities, these courses may be placed on a permanent basis by establishing a Staff College. The commission has not described the curriculum of orientation.

National Commission of Teachers-II: In 1985, the Commission opined that it is necessary for a person entering the teaching profession to be adequately trained so that he is able to competently perform the various functions expected from him. Besides acquiring subject matter .... respective teachers could also take up some specialized courses directly oriented towards teaching. Again, immediately after a person is inducted into the teaching profession, facilities should be provided to the teachers to undergo a training course related to proper orientation towards the profession and its value, skills and pedagogy, curriculum construction, use of audio-visual aids, communication skills, educational psychology, evaluation methods as well as, the use of the medium of instruction-the last being especially important for teachers whose mother tongue is different from the medium of instruction.

National Policy on Education - 1986: The National Policy on Education, and Programme of Action (POA) 1986/1992 assert that the present system does not accord teachers a proper economic and social status. It does not provide opportunities for professional and career development for teachers. Initiative for innovation and creative work for teachers is under-valued. There is need for providing proper orientation to teachers for developing the concept of values, and new techniques for value education. It was proposed : (i) to organize specially designed orientation programes in teaching methodologies, pedagogy, educational psychology, etc. for all new entrants at all levels of lecturers; (ii) to organize refresher courses for serving teachers to cover every teacher at least once in every 5 years; (iii) to organize orientation programms by using the internal resources of universities and by bringing a number of colleges together ; and (iv) to encourage teachers to participate in seminars, symposia etc.

Mehrotra Committee, 1986 : Report of the committee on revision of pay scales of teachers in the universities and colleges held the view that our present academic system was unfair to the teachers, in so far, as it did not have proper and comprehensive provision for their professional development. It is imperative to create opportunities for career and professional development of the teachers and provide incentives for good work.

The committee further stated that in view of the small annual intake of new faculty members, pedagogical/professional training was not considered essential/feasible for the teachers at the tertiary level. They were expected to get trained on the job under the supervision of their senior colleagues. However, with the rapid increase in number, unplanned growth of colleges in far-flung places, and development of educational technology, an orientation course (3-4 weeks duration) should be specially designed for the new entrants before or soon after they start teaching. The main emphasis should be on developing methodologies of teaching in the concerned subject.

Ramamurti Committee, 1990 : The committee for review of National Policy on Education, 1986 felt that the duration of orientation programs of Academic Staff Colleges was inadequate. The committee recommended that in order to enhance the quality of the teachers in the university system, pre-induction training for a period of one year after recruitment should be organized. This training should be organized on a decentralized basis by the respective universities themselves. But this committee has not discussed the curriculum of orientation program.

2.2 Attempts made by Indian Universities

In the recent past we find that a few institutions launched orientation programs meant for the teachers teaching in colleges and universities. In a survey, Joshi and Singh (1978) found that by 1970, eighteen Indian universities provided some sort of training provided some sort of training to their teaching staff. A brief and general discussion of these attempts made by Indian Universities, are discussed here:

The University of Madras started pre-service and in-service course for the university teachers. This course was of one full academic year. On the completion of this course, the university awarded a Diploma in Higher Education to the candidate.

The curriculum of the course had theory papers consisting of principles of learning, teaching, and communication; and educational evaluation. Practical training was imparted in teaching competence including preparation and use of teaching aids. observation measurement and interpretation of classroom climate; organization of seminars, symposia and workshops; construction of test items and project work.

The Bombay University had instituted a "Diploma in Higher Education" in 1972 for university teachers. This diploma course was divided into two parts: theoretical and practical. The theoretical part consisted of four papers viz. educational psychology, methods of teaching and evaluation, role of university education, and educational research.

The University of Calicut took a bold step and launched a course leading to the degree: "Master of College Teaching (MCT)" in 1975. The program was meant for teachers who were already working in colleges and universities, and also for fresh post graduates with good academic record. The course was of one year duration. The MCT program was designed to fulfil the following major objectives: to (i) familiarize the student with the theoretical concepts related to higher education; (ii) make the student understand the development and problems of higher education in India in a comparative perspective; (iii) make the student understand the techniques of instruction and evaluation in higher education; (iv) develop competency and skills necessary for effective teaching at college/university stage; and (v) develop healthy attitude towards teaching and teaching profession.

The MCT course consisted of two parts. Part I comprised of four core subjects dealing with educational foundations - philosophical, sociological and psychological; current problems of higher education in India and some select countries; and concept and issues concerning curriculum, teaching and evaluation in higher education. Part II covered three units such as, observation, practice teaching and testing; term papers and seminars of content-cum-methodology; and the development of content competencies in one's area of specialization. The instruction in pedagogic courses was organized in the Department of Education through lectures, seminars, symposia, tutorials, etc. For the observation and practice of teaching and testing, two co-operating colleges had been selected for a program of internship in teaching and testing.

In the beginning, this program attracted a good number of students, but slowly it died its natural death.

The MS University of Baroda initiated the in-service course for new and probationary teachers in July 1976. The duration of the course was one semester. Seminars were organized on topics such as: objectives of university education; university governance; history of higher education; unrest in campus; teaching styles (lecture, discussion, tutorial, programmed instructions and team teaching); audio-visual aids; evaluation procedures (internal assessment, grading, question bank and continuous assessment); multi-media approach; semester system; and practical work.

The M.S. university still continues with the course with a few academic and administrative modifications.

The Central Institute of English and Foreign Languages (CIEFL), Hyderabad, has been organizing training programs for teachers in service and for fresh students with post graduate degree in English, French, German and Russian languages since 1958. The topics are: general principles of philosophy, sociology and psychology, and methods of teaching. The training was provided by the co-ordination of all the departments of the institute.

Apart from the attempts described above, many other courses have been conducted by the Indian universities. These are mainly summer courses, short-term courses, workshops, symposia, seminars, conferences, etc.

We conclude that many courses were instituted in India, but they could not be sustained as regular programs. Lack of consistent and strong policy, and poor planning of faculty development programs could be the reasons for nonstability.

It emerged from the above attempts made by Indian universities that though several programs were started to improve teaching efficiency of college teachers time and again, none could become a necessary and regular feature of the teaching profession. It may be due to the lack of the strengthening of the policy and planning functions of faculty development programs.

As a matter of fact, a comprehensive teacher education program at the college and university levels should include the following: Pre-service education; induction; staff development; in-service education; and continuing education.

3. Approaches to Curriculum Development

The development of teacher education courses in higher education is a complex task. Diversity in philosophy, objectives, nature of studies, modalities, procedure of training, nature of curriculum and management etc. should be considered with developing curriculum and also with training of the teachers.

If we take the individual as source of curriculum formulation we will arrive at packages dominated by cognitive development, affective development, and psychomotor development. If we utilize the transaction of modalities as a source of curriculum classification we will arrive at packages which will be theory based curriculum, practice based curriculum, discipline based curriculum, and activity based curriculum. While considering agent as a source of curricular classification, we will arrive at packages like - student centered curriculum, teacher centered curriculum, or community centered curriculum. If the purpose of education is base for curriculum formulation we will find packages like vocational curriculum, and liberal curriculum etc. If we take the principle of management as a source of curriculum formulation we will find packages like horizontal curriculum, vertical curriculum, core curriculum, special curriculum, optional curriculum, and compulsory curriculum etc.

4. Curricula of Existing Orientation Programs

At present basically the training of teachers at higher stage is being done through two modes viz. distance mode and face-to-face contact mode. Indira Gandhi National Open University (IGNOU) is running a course i.e. Post Graduate Diploma in Higher Education (PGDHE) through distance mode and University Grants Commission is running regular courses through the face-to-face contact mode program of Academic Staff Colleges. The curriculum of both the programs are described here:

4.1 Curriculum of P.G. Diploma in Higher Education

The Indira Gandhi National Open University (IGNOU) launched a P.G. Diploma in Higher Education in 1992 for those who teach or aspire to teach in the universities, colleges, and other institutions of higher education. The UGC has recognized the diploma equivalent to two refresher courses in Education and one orientation course for disciplines other than Education.

The program consists of five courses including project work, each course carrying 6 credits. The curriculum of the diploma is given below:

Higher Education: Its Context and Linkages: Higher Education - Retrospects and Prospects; Indian Higher Education - Policies and Plans: Indian Higher Education - Problems and Innovation; The Progressive Social Role of University Teacher in India.

Instruction in Higher Education: in a Systemic Perspective; Communication Skills; Evaluation Perspectives in Higher Education; Evaluation in Higher Education: Mechanics and Processing.

Higher Education: The Social Psychological Field; The Indian College Student - Social and Psychological; Group Dynamics among young adults; Psychology of Learning and Teaching in Higher Education; University Teacher as a Counsellor - Problems of Indian College Student.

4.2 Academic Staff College and its Curriculum

As a sequel to the recommendations of NPE 1986, forty eight Academic Staff Colleges (ASCs) started functioning under the UGC Program for upgrading the competency of university and college teachers. The main functions of ASCs are to organize: (i) orientation courses for newly appointed teachers (preferably teachers having less than eight years of experience); and (ii) refresher courses for all serving teachers in college and university departments (atleast once in every five years).

The proposed ASC curriculum consists of four components. 'A': awareness of linkages among society, environment, development and education; 'B': philosophy of education, Indian education system and pedagogy; 'C': subject upgradation; and 'D': personality development and mangement.

The main objective of curriculum component 'A' is to enhance understanding with a view to appreciate the interdependence of higher education and various dimensions of society and its developmental needs. The purpose of incorporating component 'B' was to develop basic skills that a teacher needs for effective classroom teaching. The framers of ASC curriculum claimed that the component 'C' would enable the teachers: (i) to translate the relevant syllabus into detailed plans of classroom presentations and to effectively present the basic concepts at the appropriate level, and (ii) to become self-sufficient in keeping themselves continuously abreast of the new knowledge in their respective subjects. The component 'D' was to familiarize the college teachers with the organization and management of the college/luniversity and to delineate the role and function of a teacher within the system.

The topics suggested by UGC under these four components contain secularism, egalitarian society, status of women, casteism, environmental pollution, poverty, unemployment, urbanization, modernization, rural development, youth, indiscretion, role and responsibility of a teacher, value based education, Indian tradition, creation of an Indian identity, educational philosophy, learner and the learning process, Indian education system, school education, higher education, curriculum design, teaching methodology, evaluation methodology, classroom techniques, teaching aids, material production, reference and study skills, effective writing, extra curricular activity, how to run a club/society, sports, group behaviour, team work, and student counselling.

These topics were listed as model guidelines. However, experience shows that the ASCs have generally restricted their curriculum framework. The utility and curricular preferences need to be examined in the context of changing situations and participants. There is hardly any empirical evidence regarding the preferences given by the participants for these topics. The present exercise was undertaken keeping in mind the question of preferences of curricular topics.

Participants rating study was conducted by eliciting responses from a sample of seventy colleges and university teachers, who attended three orientation programmes at Indore. The sample belonged to four universities located at Indore, Bhopal, Sagar and Ujjain. The participants belonged to various faculties like arts, science, commerce, fine arts, humanities, law and education. Various age groups ranging from 25 to 50 years formed this sample and was represented by varying levels of qualification viz. 43 master degree holders and 27 with higher qualification. They had teaching experience ranging from one to fifteen years. Incidentally, the male ratio was equal. There were 35 male and 35 females.

The data for the curricular preferences were collected with the help of "Rating Scale for Curriculum Development of Orientation of Higher Education Teachers". There were 46 items presented in different numbers. The number of topics for curriculum component `A', `B', `C' and `D' was 15, 20, 3 and 8 respectively. The component `A' was further divided into three various aspects of the scale. The five points response pattern was followed. The topics obtaining a weighted score of 210 were considered as preferred by the participants.

5. Results and Discussion

The results pertaining to the curricular preferences of Components 'A', 'B', 'C' and 'D' are given in Table below.

Curricular preferences for the topics

S.No. Topics	Weighted Score (N = 70)
Component A : Awareness of linkages among Society, Environment, Development and Education	
A I Society	
2. Goals of higher education in India	275
3. Higher education & future scenario	249
4. Higher education & unemployment	231
5. Higher education & national integration	249
6.* Higher education & secularism	202
7. Higher education & value education	236
8. Higher education & scientific temper	280
9. Higher education & democratic outlook	245

10. Youth and discipline	245
11. Multilingualism & multiple culture	215

A II Environment

12. Environmental education	299

A III Development

13. Higher education & economic development	254
14. Higher education & rural development	238
15. Higher education & modernization	253
16. Role of college & university teachers	285

Component B : Philosophy of Education, Indian Education System and Pedagogy

B I Philosophy of Education

17. * Theories of adult learning & Principles of learning	204

B II Indian Education System

18. Organization of curriculum & course	285
19. Preparation of text books	265
20. Nonformal education	221
21. Economics of education	226
22. Socio-Psychological characteristics of students in higher education	237

B III Pedagogy

23. Methods of teaching	289
24. Organization of seminars	266
25. Tutorial method	248
26. Debate method	243
27. Models of teaching	236
28. Brain storming	243
29. Techniques of teaching	266
30. Teaching learning process	257
31. Preparation of teaching aids/equipment	266
32. Handling of overhead & film projector, camera etc.	260
33. Evaluation system	259
34. Examination system	271
35. Preparation of question paper	259
36. Preparation of question banks	237

Component C : Subject Upgradation

37. Preparation of various aspects of every discipline based on recent ideas & innovation	273

38. Preparation of annotated bibliography in the subject concerned	253
39. Review of professional journals	255
Component D : Management and Personality Development	
D I Management	
40. Information of organization of higher education (UGC, CABE, ICSSR)	288
41. Planning of higher education	262
42. Use of computer in higher education	262
43. Community development & extension work in higher edu.	238
D II Personality Development	
44. Co-curricular activities & how to run academic clubs	240
45. Students counselling, information services, testing services	254
46. Communication skills	279
47. Logical thinking	270

* Topics not preferred.

5.1 Discussion About Curricular - Topics Included

The above table reveals that the *Component 'A'*: "Awareness of linkages among society environment, development and education" covers three aspects i.e. society, environment and development. There is variance in the number of topics included for each of these three aspects. Fifteen topicis are included from sociology, four from development and only one topic is included from environmental education.

Component 'B': "Philosophy of education, Indian education system and pedagogy" includes three aspects of curriculum, i.e. philosophy of education, Indian education system and pedagogy. We find that in this component 20 topics were included. Quite a high number of topics (14) were related to the pedagogical aspect. Five topics were connected with the Indian education system, and only one topic dealt with the philosophy of education. This is quite unrealistic and unjustifiable. Philosophy of education should have been given more topics in the curriculum.

Regarding the three topics included in the *Component 'C'*: "Subject upgradation", we know that this component is to be dealt separately in the refresher courses. This should not have been included in the curriculum of orientation programs. However, some general topics have been included in the orientation program may be to attract teachers. But we feel that inclusion of this component gives a wrong perception about the orientation program.

Component 'D': "Management and personality development", has two different aspects i.e. management and personality development. It is good to note that both the aspects have been given equal importance and four topics for each have been dealt with.

5.2 Discussion about Empirical Data

The above Table also gives the curricular preferences given by the participants of ASCs. When we analyse of the curricular preferences for topics related to the *Component 'A':* "Awareness of linkages among society, environment development and education", we find that the curricular topics obtained their acceptability value in varying degrees of preference. The topics which received higher level of preferences are: (a) role of college and university teachers, (b) higher education and scientific temper, (c) goal of higher education in India, and (e) higher education and modernization. It may be noted that most of these topics gained preference from the participants.

One topic which falls short of preferability criterion was 'Higher education and secularism'. It can be said that college teachers were not in favour of inclusion of this topic in the ASC curriculum. It cannot, however, be said with full confidence that the college teachers did not find it relevant, or that they might have developed insensitivity towards this issue of national significance. It may be possible that the participating teachers were less sensitive to this issue due to inadequate discussion sessions while this topic was presented; or may be, the college teachers felt that its inadequate treatment would create new problems rather than the expected clarity. Our experience of conducting discussion sessions show that it needs a lot of alertness on the part of resource persons for carrying through topics related to the cause of poverty, caste system, secularism, and other socially sensitivity topics.

To conclude, under *Component 'A':* "Awareness of linkages among society, environment, development and education" should continue to remain in the curriculum. Topics of higher education and secularism need fresh examination, if they are to be continued, for otherwise valid reasons. Perhaps, sensitive topics should either be deleted from the curriculum or should be dealt with a little more care and academic authority may be, video lectures on such topics should be tried out.

Curricular preferences for component 'B': "philosophy of education, Indian education system and pedagogy". It is evident from the above data that the participants have shown varying degrees of preferability in order of their ranking are: (a) methods of teaching, (b) organization of curriculum and courses, (c) examination system, (d) techniques of teaching, (e) preparation of teaching aids/equipments, and (f) organization of seminars. It indicates the high level of appreciation and preferability of these topics for their place in the curriculum of ASC. It may be noticed that nineteen out of twenty topics have reached the preferability criterion

It is worth mentioning that the topic "Theories of adult learning" could not reach the preferability criterion. Strangely enough, we had a different viewpoint. Looking from the view point of college teaching, we perceived that this topic was very useful. It is surprising that the participants did not favour its inclusion. More data should be gathered from other participants and sources. Through triangulation, the new data may be interpreted with a gestalt view. From our experience, we feel that college teachers might not have liked the theoretical aspects of adult learning theories. They would, perhaps, like simple guidelines for day to day teaching in the college.

Component 'C': "Subject upgradation": In the initial stage of the ASC scheme, few content topics were introduced in the orientation programs so as to see the preferability of the participants. Table shows that all the topics pertaining to subject upgradation gained preference by the college teachers. May be, the importance and presentation of the topics have jointly contributed to the preferability. It may, therefore, be concluded that the topic of curriculum component, 'C' should be continued in the ASC programs.

Component 'D' : "Management and personality development": It is evident from the response that the preference of the teachers showed varying degrees of preferability. Higher preferred topics are: (a) planning of higher education, (b) information about organizations of higher education, like UGC and ICSSR, (c) communication skills, and (d) logical thinking.

The topics of component 'D' attained the preferability criterion. It appears that the participating teachers were convinced of the importance and utility of this component and were appreciative of the presentations.

6. Conclusion

We find that there is a great variety in the curriculum developed and transacted by relevant institutions of higher education and also by various ASCs. The Indore ASC has developed and transacted a curriculum having 15 topics in component 'A': "Awareness of linkages among society, environment and development"; 20 topics in component 'B': "Philosophy of education, Indian education system and pedagogy"; 03 topics in component 'C':"Subject upgradation"; and 08 topics in component 'D': "Management and personality development". There is a variation of about seven hundred percent between component 'C' and component 'B'. Why this much variation? Is it that organizers of ASC had a definite view in favour of certain dimensions of the curriculum? Is it that the basic document and its guidelines provided by UGC has driven organizers to follow this uneven distribution? Is it that resource persons and their availability was responsible for this scenario? Is it that repeated feedback of the participants of the ASC helps the organizers arrive at this structure? Is it that literature and other facilities have directed subtlety to these events? What should it be? Should we not encourage diversity of curricular approaches and contents, especially when our target audience groups and the situational conditions are heterogeneous.

Regarding the curricular preferences, it seems fair to say that the curriculum was liked by the participating teachers in general. On the basis of the data analyzed, we find that college teachers did not like the topics, viz. higher education and secularism, theories of adult learning and principles of learning. It would, therefore, be in the fitness of things to suggest that the program should be strengthened by improving the presentation of these topics. However, more data should be collected and analyzed before taking up any decision regarding dropping of certain topics.

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Are Screening Tests Essential ?

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Many persons question the desirability of screening tests for admission to plus two stage, college and University classes and professional courses. The detractors of the system suggest that marks in the qualifying examinations with additional consideration or bonus marks for other relevant qualification should be the main criteria for selection. They point out that another test by the same University or Board for its own candidates is rather illogical and unjustified.

However, one should realise that the issues involved are not so simple or straight forward. First, it is to be remembered examinations for plus-two or college classes are designed to test the knowledge and comprehension of candidates and that a huge number of students appear in these examinations. The Uttar Pradesh Board of School Education handles over 20 lakh candidates. The Central Board of Secondary Education handled about 890 Question Papers in 1995. Entrance tests on the other hand, are conducted to screen candidates for specific courses and programmes and have comparatively smaller number of papers and candidates to deal with. There is thus nothing intrinsically wrong with these examinations, though their nature and operation can always be improved. For instance, entrance tests may include some queries to know the aptitude of candidates.

Now we have over 210 University institutes and 34 Boards of School Education. They have, in essence, different standards. quite a few examining agencies are known for awarding higher grade, whereas some are alleged to be very frugal in this respect. So, for a common entry, uniformity and just selection, some type of screening from among all the candidates is imperative. Moreover, the practice is already in vogue in areas such as banking service recruitment, State and all-India services. Nobody objects to competitive examinations which are the order of the day. It is said that performance in examinations, as also in life, at times depends on chance or luck. But that is true for both competitive as well as academic examinations. Also, good students, in general, are good everywhere. Of course, where the number is relatively small and the control and conduct better, chance for cases of malpractices are considerably reduced.

In fact, selection tests serve as an important check on the tendency for copying in qualifying examinations. Where students, parents, teachers, all know that the 'grade' in examinations will not automatically ensure their entry into professional or recruitment courses, mostly they do not adopt unfair means. It effectively destroys the popular syndrome-get a high percentage by hook or crook and straightaway enter a medical/engineering college. If admission is done on the so-called merit, the number of unfair means cases multiply. In Himachal, out of 858 centres of the Himachal Pradesh Board of School Education, 37 examination centres were cancelled in 1995 for malpractices on this very count. One of the factors which contribute to the prevalence of malpractices was the announcement of the decision to admit students to Junior Basic Training Schools on the basis of merit in Matriculation examination. Indeed, entrance tests at all stages will have a sobering effect on the entire teaching-learning and examination process.

It is wrong to insist that nature and pattern of examinations and that of screening tests should be identical. The general examination usually comprises three types of questions- very short-answer type, short-answer type, and essay type. However, in entrance tests multiple-choice, Objective type queries are given. These modes have their own utility, and neither of them is dispensable. Indeed, they adequately supplement each other. Various surveys have indicated that majority of the students selected in competitive tests are those whose score in the qualifying examination lies between 55 and 70 percent.

It is often complained that the tests have led to a mushroom growth of teaching shops and tuition-centres. But it is a fact that otherwise too, private academies have been coming up in large numbers, though now-a-days greater stress in naturally on the preparation for professional courses. Why can't the regular institutions arrange for the required type of preparatory programmes of coaching, including guidance and counselling facilities? Necessity is the mother of invention Students will go where they get what they need. Several good institutes have strong career and placement sections. Many poor students can be benefited if all education institutes organise regular placement or entrance courses for their own students. A raise in fees or funds is often resented and strongly opposed, but nobody grudges higher cos for such useful programmes.

In fact, entrance tests is a necessity now. But it is incorrect to consider them a panacea for all ills in the system of education o examination. Much depends on the implementers, on their uprightness and integrity, initiative and convictions. We should also prepare candidates to understand the mechanism and functioning-process of the system. In schools and colleges-especially in rural regions-students require sustained orientation in this area.

In seems appropriate that some of the negative outcomes of screening tests should also be mentioned. There is, for instance a growing tendency to prepare students for only those portions of the syllabi which are covered in the entrance tests. For example, many educational institutions now-a-days concentrate only on the XII standard syllabi, leaving aside the XI class items - as the Board Examination is at the class XII level, and the syllabi for several screening tests concerns specifically the plus two standard. Also many students and teachers ignore English at the plus-two stage, because only a few professional institutes like AIMS, AFMC examine students in this subject. Very often students are also indifferent to practical work, since entrance tests comprise only theory papers.

However, these are all examples of minor internal maladies which can be largely controlled or cured through internal cleansing. The Central Board of Secondary Education (CBSE), for example, has introduced several reforms in this direction. To name a few-standardisation of school education and conduct of examination, continuous internal evaluation, introduction of the discipline of conversational English, give compulsory subjects, marked improvement in question- papers, etc. The Jammu and Kashmir Board of School Education has conducted a worthwhile case study, whereas Himachal Pradesh explored, through a high-level expert-committee, immediate and long-standing reforms and improvement in the functioning of Himachal Pradesh Board of School Education.

Selections through regional, State or Central level competitions also impart unique inner confidence and self-assurance to those who are thus chosen. They fee they are selected owing to their own hardwork and intelligence. There are lesser chances of malpractices or corruption. It is seen that even among the employees, those selected through direct, open competitions often fare and conduct themselves far better then others who come in through departmental promotion procedures. In the beginning, students and parents may not like entrance or admission tests. But when this becomes a general practice and also an integral part of education and life, the tests will tend to have deeper roots and greater amount of credibility and acceptability. In the process, the system of education will also incorporate excellence, social relevance and employability in greater measure.

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A Conversion Scale For Different Grading Systems

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1. The Problem

Evaluation of performance is integral to any examination. For this different Institution follow different systems of evaluation. The conventional or traditional Universities generally follow the system of grading in a percentage scale. Here, a question paper carried a maximum of 100 marks and based on his performance, a candidate is awarded a score within 100. Here, normally, there is no provision for negative scores. A candidate may obtain the lowest 0 score or the highest 100 score or any score in between 0 and 100. In this scale the position of a scorer in the 100-point scale is determined by the score itself. If the candidate is appearing in a number of papers, then the total scores obtained are computed and the average score is expressed as the average percentage score. It is easy to arrange the candidates in order of merit in this scale.

As mentioned earlier, the systems of evaluation or grading are not same in all the institutes. For instance, some Agricultural Universities follow the system of grading in a 4- point scale. In this system the grading is basically qualitative. Thus, examinees are graded A, B, C, D, or F. While A denotes excellent, B denotes good, C denotes fair, D denotes poor and F denotes fail. In this system also the qualitative gradings are made quantitative by allotting some numerical values (points) to the letter grades. Thus A is given the numerical value 4, B is given the numerical value 3, C is given the numerical value 2, D is given the numerical value 1 and F is given 0. Thus, ignoring the failure, there are four grades and hence the scale is called a 4 point scale. In this scale any number of examinees securing the same grade are given equal ranks. If five examinees are getting A grade in a paper, all the five examinees are to be considered as of equal merit. But in defining excellent, good, fair, poor etc. the grades are quantified by saying that excellent means securing 80% or above marks. Similarly, good means securing 70% and above but below 80% marks, fair is for 60% and more but below 70% marks and poor grade is for 50% and above but below 60% marks. Some examiners evaluate the answer scripts in numerical values and then determine the letter grades accordingly. There are examiners who, after going through the answer scripts, make an assessment of grade and award the grade without numerical marking. Ultimately of course, the numerical values of the grades are considered in calculating the overall performance.

Another scale of grading in vogue is the 10-point scale. In this system of grading, answers are evaluated in numerical values and expressed in percentages. Thereafter, by dividing the percentage values by 10, the grades are expressed in 10 point scale. Thus an examinee securing 80% marks is graded 8.0 in the 10-point scale.

Some other scales are also in use in some institutes; but our discussions will be restricted to these three scales namely, the percentage scale, the 4-point scale and the 10-point scale only.

2. Need of Conversion

When in an examination all candidates are evaluated in the same scale of gradings, there is no necessity for conversion. By computing overall percentage marks in the percentage scale, the Overall Grade Point Average (O.G.P.A.) in the 4-point scale and the Cummulative Grade Point Average (CGPA) is the 10-point scale respectively, the positions of the examinees in the three scales can be determined.

A problem however, arises when one has to prepare a merit list of a number of candidates qualifying for the same academic programme but under different systems of grading (or evaluation). For instance when B.Sc (Agri) degree was offered by both the Gauhati and the Dibrugarh Universities of Assam, the Candidates were graded in the percentage for 100 point scale. These universities may be termed as the conventional or the traditional universities. For all degree programmes this was the common scale of evaluation. Later on, the Assam Agricultural University came up and at the initial stage the university followed the 4-point scale of grading. The system of grading was later changed to follow the 10-point scale of grading. Thus, there are those sets of Agricultural Graduates and Post Graduates graded in three different scales of grading. Occasion arises, especially at the time of admission to higher study programmes, award of scholarships or the preparation of merit lists for appointment to some posts. In such situations, unless a conversion method is there to determine the equivalent scores in different scales, a common merit list cannot be prepared. That is why a conversion method is necessary.

Another consideration is to find the equivalent grades for first class, second class etc. In the conventional universities when examinees are evaluated in the 100 point scale, generally 60% marks are considered the minimum for a first class. In Bachelor Degree levels, 40% marks represent the minimum fixed for a second class. On the other hand, in the 4-point scale and the 10-point scale, no class is normally mentioned. But it becomes important, particularly in the case of selection of candidates for appointments to know the equivalent grades in the 4-point scale and the 10-point scale corresponding to a first class or high second class marks in the percentage scale. In other words, one has to know the grade values in the 4-point or 10-point scale corresponding to a value in the percentage scale.

The third consideration rather requires more attention. It may be stated as follows:

The 10-point scale and 100-point scale at the first sight seem to be easy to compare. It was mentioned above that first the evaluation is done in the percentage scale and then it is expressed in 10-point scale simply by dividing the percentage value by 10. Thus, 75% is expressed as 7.5. Now the question is can we consider a score 7.5 in 10-point scale as equivalent to a score 75 in the 100-point scale? Certainly not. Because, in conventional evaluation (100-point scale), 75% mark is the star mark in a subject; but in 10-point scale grading system 7.5 is just above pass mark. It may be mentioned that while in the Bachelor Degree Programme in conventional grading 40% is the minimum qualifying mark, in 10-point scale 6.0 is the minimum qualifying mark. Hence 6.0 in 10-point scale is not equivalent to 60% (i.e. first class mark) in the percentage scale.

Similarly, the minimum qualifying grade on the Bachelor's degree level in the 4-point scale is 2.00. We cannot say that 2 in the 4-point scale is equivalent to 50% marks in the percentage scale.

These points show that a conversion scale for finding out the equivalent grades in different systems of evaluation is necessary.

3. Methodology

In all systems of evaluation, the ultimate result in an examination is determined by taking into consideration the various grades obtained by a candidate in all the courses of study. The minimum fixed for passing a subject is fixed at certain grade point and minimum qualifying grade point for successful completion of the programme is fixed at a bit higher grade point. To explain the point let the actual situation be considered.

In conventional evaluation (Percentage scale) to pass, a candidate is to secure 33% marks in a subject. But he/she must secure at least 40% marks in the Major subject for qualifying for the degree (in Bachelor's programme).

In 4-point scale a candidate is to secure an OGPA at least equal to 2.00 to qualify for the degree, but he is declared to have passed a course even if he gets D grade (1 grade point) in a course. The OGPA is computed by taking the sum of products of letter grade values and the corresponding credit hours of all the courses and then dividing it by the total number of credit hours in the programme. eg. if a candidate obtains A, C, D and B grades in four courses of 2, 1, 3 and 2 credit hours respectively, then his/her OGPA will be

$$\begin{aligned} \text{OGPA} &= (4 \times 2 + 2 \times 1 + 1 \times 3 + 3 \times 2)/(2 + 1 + 3 + 2) \\ &= (8 + 2 + 3 + 6)/8 \\ &= 19/8 \\ &= 2.375 \\ &= 2.38 \end{aligned}$$

In 10-point scale, the CGPA is computed in the same manner, that is, by taking the sum of products of the grade points and the credit hours of the courses and dividing it by the total number of credit hours. Thus, let a candidate secure 7.2, 5.8, 8.0 and 9.5 in four courses of 2, 4, 1 and 3 credits respectively. Then his/her CGPA will be

$$\begin{aligned} \text{CGPA} &= (7.2 \text{ x } 2 + 5.8 \text{ x } 4 + 8.0 \text{ x } 1 + 9.5 \text{ x } 3)/(2 +4 +1 +3) \\ &= (14.4 +23.2 +8.0 +28.5)/10 = 74.1/10 = 7.41 \end{aligned}$$

In the under graduate programme the minimum grade point fixed for passing in a course is 5.00, but qualifying for the successful completion of the whole programme the grade point is fixed at 6.00.

For arriving at a conversion scale, we are to consider the minimum qualifying score and the maximum possible score in each of the scales. In our above example, these values are as follows:

Maximum possible score in the percentage scale is 100 and the minimum qualifying score in the percentage scale is 40.

Similarly, the maximum possible score and the minimum qualifying score in 4-point scale are 4 and 2 respectively.

The maximum possible score and the minimum qualifying score in the 10-point scale are 10 and 6 respectively.

Now for the equivalent scores in the three scales the proportions of the difference between the score and minimum qualifying values to the range (is difference between the maximum possible score and the minimum qualifying score) of scores in all the scale will be equal. Thus, if P.F and T represent the percentage score scale, four-point scale and Ten-point scale scores respectively, then

$$(P-40)/(100-40) = (F-2)/(4-2) = (T-6)/(10-6) \qquad \ldots\ldots\ldots\ldots (1)$$

From (1) we get

$$\begin{aligned}
(P-40)/(100-40) &= (F-2)/(4-2) \\
(P-40)/60 &= (F-2)/2 \\
(P-40) &= (30F-60) \\
P &= 30F-20 && \ldots\ldots\ldots\ldots (2) \\
\text{and} \quad F &= (P+20)/30 && \ldots\ldots\ldots\ldots (3) \\
\text{Again } (P-40)/60 &= (T-6)/4 \\
(P-40) &= (15T-90) \\
\text{Therefore } P &= 15T-50 && \ldots\ldots\ldots\ldots (4) \\
\text{and} \quad T &= (P+50)/15 && \ldots\ldots\ldots\ldots (5) \\
\text{and} \quad (F-2)/2 &= (T-6)/4 \\
(T-6) &= (2F-4) \\
T &= 2F+2 && \ldots\ldots\ldots\ldots (6) \\
\text{and} \quad F &= (T-2)/2 && \ldots\ldots\ldots\ldots (7)
\end{aligned}$$

From the relations (2) to (7) we may get for a given value in one scale the corresponding value in another scale.

4. Application of the Results

Ex.1 To compute the equivalent scores in the 4-point scale and the 10-point scale corresponding to the score 50 in the percentage scale.

Soln: Putting the value of P in (3) we get

$$F = (50 + 20)/30 = 70/30 = 2.33$$

and putting the value of P in (5) we get

$$T = (50 + 50)/15 = 100/15 = 6.666 = 6.67$$

Ex.2 To find the equivalent scores in the percentage scale corresponding to the scores 6.5, 6.67 and 6.7 in the 10-point scale.

Soln: Putting the value of T in equation (4) we get the corresponding score in the percentage scale.

Thus, for $T = 6.5$, $P = 15 \times 6.5 - 50 = 97.5 - 50 = 47.5$

for $T = 6.67$, $P = 15 \times 6.67 - 50 = 100.05 - 50 = 50.05$

for $T = 6.7$, $P = 15 \times 6.7 - 50 = 100.5 - 50 = 50.5$

Ex.3 To find the equivalent scores in the percentage scale and the 4-point scale corresponding to the scores 6.0 and 10.0 in the 10-point scale.

Soln: Putting the values of T in the relation

$P = 15T - 50$, We get,

for $T = 6.0$, $P = 15 \times 6 - 50 = 90 - 50 = 40$

for $T = 10.0$, $P = 15 \times 10 - 50 = 150 - 50 = 100$

Again putting the values of T in the relation $T = 2F + 2$ We get

for $T = 6.0$, $6.0 = 2F + 2$ Therefore $F = 2.0$

for $T = 10.0$, $10.0 = 2F + 2$ Therefore $F = 4.0$

(This shows that the relations give the minimum qualifying scores in the percentage and 4-point scales corresponding to the minimum qualifying scores in the 10-point scale. Same is the case for the maximum possible scores. Thus the relations hold good for the extreme values of the scales).

The above discussions are invovling the under graduate programmes.

Now let the Post Graduate Programmes be considered. In Post Graduate Programmes the minimum qualifying scores in all the scales are a bit higher than those for under graduate programmes. Of course, the maximum possible scores in all the scales are same as those for under graduate programmes. Applying the same principle as for under graduate programmes, relations among the three scales of grading can be established.

The minimum qualifying score and maximum possible score in the percentage scale are 45 and 100 respectively. The corresponding scores in 4-point scale are 2.5 and 4.0 and those in 10-point scale are 7.0

and 10.0 respectively. As before, the proportions of the difference between a scale value and the minimum qualifying score to the difference between the maximum possible score and the minimum qualifying score will be equal in all the scales. Thus the relation may be written as

$$
\begin{aligned}
(P - 45)/(100 - 45) &= (F - 2.5)/(4 - 2.5) \\
&= (T - 7.0)/(10 - 7.0) \qquad \ldots\ldots\ldots\ldots\ldots \ (8)
\end{aligned}
$$

Where P, F and T denote the percentage scale, the 4-point scale and the 10-point scale respectively. From (8) we get

$$
\begin{aligned}
& (P - 45)/(100 - 45) = (F - 2.5) \;/\; (4 - 2.5) \\
\Rightarrow\quad & (P - 45)/55 = (F - 2.5)/1.5 \\
\Rightarrow\quad & 1.5P = 55F - 137.5 + 67.5 = 55F - 70.0 \\
\therefore\quad & P = (55F - 70.0)/1.5 \qquad \ldots\ldots\ldots\ldots\ldots \ (9) \\
\text{and}\quad & F = (1.5P + 70.0)/55 \qquad \ldots\ldots\ldots\ldots\ldots \ (10) \\
\text{Again}\quad & (P - 45)/(100 - 45) = (T - 7.0)/(10.0 - 7.0) \\
\Rightarrow\quad & (P - 45)/55 = (T - 7.0)/10.0 - 7.0) \\
\Rightarrow\quad & 3P = 55T - 385 + 135 = 55\ T - 250 \\
\therefore\quad & P = (55T - 250)/3 \qquad \ldots\ldots\ldots\ldots\ldots \ (11) \\
\text{and}\quad & T = (3P + 250)/55 \qquad \ldots\ldots\ldots\ldots\ldots \ (12) \\
\text{Further,}\quad & (F - 2.5)/(4 - 2.5) = (T - 7.0)/(10 - 7.0) \\
\Rightarrow\quad & (F - 2.5)/1.5 = ((T\text{-}7.0)/3.0 \\
\Rightarrow\quad & 3F = 1.5T - 10.5 + 7.5 \\
& = 1.5T - 3.0 \\
\therefore\quad & F = 0.5T - 1.0 \qquad \ldots\ldots\ldots\ldots\ldots \ (13) \\
\text{and}\quad & T = (3F + 3.0)/1.5 = 2F + 2.0 \qquad \ldots\ldots\ldots\ldots\ldots \ (14)
\end{aligned}
$$

Ex.4. To find the equivalent scores in the 4-point scale and the 10-point scale corresponding to the score 45 and 100 in the percentage scale.

Soln: Putting the values of P in the relations (10) and (13) the corresponding values of F and T can be obtained. Thus from the relation

$$F = 1.5P + 7.00/55$$

Putting $P = 45$, $F = (1.5 \times 45 + 70.0)/\ 55 = 137.5/55 = 2.5$

and putting $P = 100$, $F = (1.5 \times 100 + 70.0)/55 = 220.0/55 = 4.0$

Similarly, from the relation

$T = (3\ P + 250)/55,$

Putting $P = 45$, $T = (3 \times 45 + 250)/55 = 385/55 = 7.0$

and putting $P = 100$, $T = (3 \times 100 + 250)/55 \doteq 550/55 \doteq 10.0$

(This shows that the relations hold good for the minimum qualifying score and maximum possible scores at the scales)

Ex.5. To find the equivalent scores in the percentage scale and the 10-point scale corresponding to the score 3.0 in the 4-point scale.

Soln: From the relation

$P = (55T - 70/1.5,$

for $F = 3.0$, $P = (55 \times 3 - 70)/1.5 = (165 - 70)/1.5 = 95/1.5 = 63.33$

and from the relation $T = 2F + 2.0$,

for $F = 3.0$ we have

$T = 2 \times 3 + 2.0 = 8.0$

Ex.6. To find the equivalent scores in the percentage scale and the 4-point scale corresponding to be score 7.67 in the 10-point scale.

Soln: From the relation

$P = (55T - 250)/3$

for $T = 7.67$, $P = (55 \times 7.67 - 250/3 = 171.85/3 = 57.28$

and from the relation, $F = 0.5T - 1.0$

for $T = 7.67$, $F = 0.5 \times 7.67 - 1.0$

$= 2.835 = 2.84$

Ex.7. If 80% score be the distinction mark in the percentage scale what would be the corresponding distinction scores in the 4-point and the 10-point scales (i) in the undergraduate porgramme and (ii) in the post graduate programme?

Soln: (i) For the undergraduate programme the relation between the percentage score and the 4-point and 10-point scores are :-

$F = (P + 20)/30$ and $T = (P + 50)/15$ respectively,

Now for $P = 80$, $F = (80 + 20)/30 = 10/3 \doteq 3.33$

and $T = (80 + 50)/15 = 130/15 = 8.67$

(ii) For the post graduate programme the relations between the percentage scale and the 4-point and 10 point scale are :-

$F = (1.5\ P + 70.0)/55$ and $T = (3P + 250)/55$ respectively, Hence, for $P = 80$, $F = (1.5 \times 80 + 70.0)/55$

$= (120.0 + 70.00)/55$

$= 190/55 = 3.45$

and $T = (3 \times 80 + 250)/55 = 490/55 = 8.91$

Ex.8. If 55% be the high second class mark in the percentage scale, find the corresponding scores in 4-point and 10-point scale in post graduate programme.

Soln: From the relations

$F = (1.5P + 70.0/55)$ and $T = (3P + 250)/55$

for $P = 55$, $F = (1.5 \times 55 + 70.0)/55 = 152.8/55 = 2.77$

and $T = (3 \times 55 + 250)/55 = 415/55 = 7.55$

5. Generalisation of the conversion relation

The relations derived above can very well be generalised for any scale proved the minimum qualifying scores and the maximum allowable scores of the scale of grading are known.

The generalisation may be put as follows:

Let X, Y and Z be the three different scales of grading. Let X_0, Y_0, Z_0 and X_m, Y_m, Z_m, be the minimum qualifying scores and the maximum permissible scores respectively in the three scales. Then the relation for converting a particular score in a scale to the corresponding equivalent scores in other scales will be given by

$$(X - X_0)/(X_m - X_0) = (Y - Y_0)/(Y_m - Y_0) = (Z - Z_0)/ (Z_m - Z_0) \;\ldots\ldots\; (A)$$

6. Summary and Conclusion

The relation for both the undergraduate programmes and the post graduate programme are seen to be appropriate for the minimum qualifying and maximum possible scores in the scales. Hence, the same relations will be appropriate for conversion of the scores in one scale to the corresponding equivalent scores in the other scales.

The relations have clarified that 7.67 score in the 10-point scale is not equivalent to 76.7% scores in the percentage scale. Similarly, a score 3 in the 4-point scale is just slightly above the first class mark in the conventional percentage scale. The relation derived for conversion of score from one scale to another in the three scales of grading considered in the above discussions can be put as follows:

(1) For Undergraduate programme:

$$\begin{array}{lll} F = 30F - 20, & F = (P + 20)/30, & T = (P + 50)/15 \\ = 15T - 50 & = (T-2)/2 & = 2F + 2 \end{array}$$

(2) For post graduate programme:

$$\begin{array}{lll} P = (55F - 70.0)/1.5, & F = (1.5P + 70)/55, & T = (3P + 250/55) \\ = (55T - 250)/3 & = 0.5T - 1.0 & = 2F + 2.0 \end{array}$$

The relation can be generalised for any scales provided the minimum qualifying scores and the maximum permissible scores in the scales are known.

Based on the relations developed two tables have been prepared for Under Graduate and Post Graduate programmes which can be used as Ready Reckoner for conversion of scores from one scale to another. The two tables are given under Appendices.

APPENDIX

Table A

Conversion of Scores for Under Graduate Programme

Score in Percentage Scale
(Score in 10-point Scale)

Score in 4-point Scale	0	1	2	3	4	5	6	7	8	9
2.0	40.00 (6.00)	40.30 (6.02)	40.60 (6.04)	40.90 (6.06)	42.20 (6.08)	41.50 (6.10)	41.80 (6.12)	42.10 (6.14)	42.40 (6.16)	42.70 (6.18)
2.1	43.00 (6.20)	43.30 (6.22)	43.60 (6.24)	43.90 (6.26)	44.20 (6.28)	44.50 (6.30)	44.80 (6.32)	45.10 (6.34)	45.40 (6.36)	45.70 (6.38)
2.2	46.00 (6.40)	46.30 (6.42)	46.60 (6.44)	46.90 (6.46)	47.20 (6.48)	47.50 (6.50)	45.80 (6.52)	45.80 (6.54)	48.10 (6.56)	48.70 (6.58)
2.3	49.00 (6.60)	49.30 (6.62)	49.60 (6.64)	49.90 (6.66)	50.20 (6.68)	50.50 (6.70)	50.80 (6.72)	51.10 (6.74)	51.40 (6.76)	51.70 (6.78)
2.4	52.00 (6.80)	52.30 (6.82)	52.60 (6.84)	52.90 (6.86)	53.20 (6.88)	53.50 (6.90)	53.80 (6.92)	54.10 (6.94)	54.40 (6.96)	54.70 (6.98)
2.5	55.00 (7.00)	55.30 (7.02)	55.60 (7.04)	55.90 (7.06)	56.20 (7.08)	56.50 (7.10)	56.80 (7.12)	57.10 (7.14)	57.40 (7.16)	57.70 (7.18)
2.6	58.00 (7.20)	58.30 (7.22)	58.60 (7.24)	58.90 (7.26)	59.20 (7.28)	59.50 (7.30)	59.80 (7.32)	60.10 (7.34)	60.40 (7.36)	60.70 (7.38)
2.7	61.00 (7.40)	61.30 (7.42)	61.60 (7.44)	61.90 (7.46)	62.20 (7.48)	62.50 (7.50)	62.80 (7.52)	63.10 (7.54)	63.40 (7.57)	63.70 (7.58)
2.8	64.00 (7.60)	64.30 (7.62)	64.60 (7.64)	64.90 (7.66)	65.20 (7.68)	65.50 (7.70)	65.80 (7.72)	66.10 (7.74)	66.40 (7.76)	66.70 (7.78)
2.9	67.00 (7.80)	67.30 (7.82)	67.60 (7.84)	67.90 (7.86)	68.20 (7.88)	68.50 (7.90)	68.80 (7.92)	69.10 (7.94)	69.40 (7.96)	69.70 (7.98)
3.0	70.00 (8.00)	70.30 (8.02)	70.60 (8.04)	70.90 (8.06)	71.20 (8.08)	71.50 (8.10)	71.80 (8.12)	72.10 (8.14)	72.40 (8.16)	72.70 (8.18)
3.1	73.00 (8.20)	73.30 (8.22)	73.60 (8.24)	73.90 (8.26)	74.20 (8.28)	74.50 (8.30)	74.80 (8.32)	75.10 (8.34)	75.40 (8.36)	75.70 (8.38)

Table A (Continued)

3.2	76.00	76.30	76.60	76.90	77.20	77.50	77.80	78.10	78.40	78.70
	(8.40)	(8.42)	(8.44)	(8.46)	(8.48)	(8.50)	(8.52)	(8.54)	(8.56)	(8.58)
3.3	79.00	79.30	79.60	79.90	80.20	80.50	80.80	81.10	81.40	81.70
	(8.60)	(8.62)	(8.64)	(8.66)	(8.68)	(8.70)	(8.72)	(8.74)	(8.76)	(8.78)
3.4	82.00	82.30	82.60	82.90	83.20	83.50	83.80	84.10	84.40	84.70
	(8.80)	(8.82)	(8.84)	(8.86)	(8.88)	(8.90)	(8.92)	(8.94)	(8.96)	(8.98)
3.5	85.00	85.30	85.60	85.90	86.20	86.50	86.80	87.10	87.40	87.70
	(9.00)	(9.02)	(9.04)	(9.06)	(9.08)	(9.10)	(9.12)	(9.14)	(9.16)	(9.18)
3.6	88.00	88.30	88.60	88.90	89.20	89.50	89.80	90.10	90.40	90.70
	(9.20)	(9.22)	(9.24)	(9.26)	(9.28)	(9.30)	(9.32)	(9.34)	(9.36)	(9.38)
3.7	91.00	91.30	91.60	91.90	92.20	92.50	92.80	93.10	93.40	93.70
	(9.40)	(9.42)	(9.44)	(9.46)	(9.48)	(9.50)	(9.52)	(9.54)	(9.56)	(9.58)
3.8	94.00	94.30	94.60	94.90	95.20	95.50	95.80	96.10	96.40	96.70
	(9.60)	(9.62)	(9.64)	(9.66)	(9.68)	(9.70)	(9.72)	(9.74)	(9.76)	(9.78)
3.9	97.00	97.30	97.60	97.90	98.20	98.50	98.80	99.10	99.40	99.70
	(9.80)	(9.82)	(9.84)	(9.86)	(9.88)	(9.90)	(9.92)	(9.94)	(9.96)	(9.98)
4.0	100.00									
	(10.00)									

Table B

Conversion of scales for Post Graduate Programmes Score in percentage scale (Score in 10-point scale)

Score in 4-point Scale	0	1	2	3	4	5	6	7	8	9
2.5	45.00	45.37	45.73	46.10	46.47	46.83	47.20	47.57	47.93	48.30
	(7.00)	(7.02)	(7.04)	(7.06)	(7.08)	(7.10)	(7.12)	(7.14)	(7.16)	(7.18)
2.6	48.67	49.03	49.40	49.77	50.13	50.50	50.78	51.23	51.60	51.97
	(7.20)	(7.22)	(7.24)	(7.26)	(7.28)	(7.30)	(7.32)	(7.34)	(7.36)	(7.38)
2.7	52.33	52.70	53.07	53.43	53.80	54.17	54.53	54.90	55.17	55.63
	(7.40)	(7.42)	(7.44)	(7.46)	(7.48)	(7.50)	(7.52)	(7.54)	(7.56)	(7.58)
2.8	56.00	56.37	56.73	57.10	57.47	57.83	58.20	58.57	58.93	59.30
	(7.60)	(7.62)	(7.64)	(7.66)	(7.68)	(7.70)	(7.72)	(7.74)	(7.76)	(7.78)

Table B (Continued)

Score in 4-point Scale	0	1	2	3	4	5	6	7	8	9
2.9	59.67 (7.80)	60.03 (7.82)	60.40 (7.84)	60.77 (7.86)	61.13 (7.88)	61.50 (7.90)	61.87 (7.92)	62.23 (7.94)	62.60 (7.96)	62.97 (7.98)
3.0	63.33 (8.00)	63.70 (8.02)	64.07 (8.04)	64.43 (8.06)	64.80 (8.08)	65.17 (8.10)	65.53 (8.12)	65.90 (8.14)	66.27 (8.16)	66.63 (8.18)
3.1	67.00 (8.20)	67.37 (8.22)	67.73 (8.24)	68.10 (8.26)	68.47 (8.28)	68.83 (8.30)	69.20 (8.32)	69.57 (8.34)	69.93 (8.36)	70.30 (8.38)
3.2	70.67 (8.40)	71.03 (8.42)	71.40 (8.44)	71.77 (8.46)	72.13 (8.48)	72.50 (8.50)	72.87 (8.52)	73.23 (8.54)	73.60 (8.56)	73.97 (8.58)
3.3	74.33 (8.60)	74.70 (8.62)	75.07 (8.64)	75.43 (8.66)	75.80 (8.68)	76.17 (8.70)	76.53 (8.72)	76.90 (8.74)	77.27 (8.76)	77.67 (8.78)
3.4	78.00 (8.80)	78.37 (8.82)	78.73 (8.84)	79.10 (8.86)	79.47 (8.88)	79.83 (8.90)	80.20 (8.92)	80.57 (8.94)	80.93 (8.96)	81.30 (8.98)
3.5	81.67 (9.00)	82.03 (9.02)	82.40 (9.04)	82.77 (9.06)	83.13 (9.08)	83.50 (9.10)	83.87 (9.12)	84.23 (9.14)	84.60 (9.16)	84.97 (9.18)
3.6	85.33 (9.20)	85.70 (9.22)	86.07 (9.24)	86.43 (9.26)	86.80 (9.28)	87.17 (9.30)	87.53 (9.32)	87.90 (9.34)	88.27 (9.36)	88.63 (9.38)
3.7	89.00 (9.40)	89.37 (9.42)	89.73 (9.44)	90.20 (9.46)	90.47 (9.48)	90.83 (9.50)	91.20 (9.52)	91.57 (9.54)	91.93 (9.56)	92.30 (9.58)
3.8	92.67 (9.60)	93.03 (9.62)	93.40 (9.64)	93.77 (9.66)	94.13 (9.68)	94.50 (9.70)	94.87 (9.72)	95.23 (9.74)	95.60 (9.76)	95.97 (9.78)
3.9	96.33 (9.80)	96.70 (9.82)	97.07 (9.84)	97.43 (9.86)	97.80 (9.88)	98.17 (9.90)	98.53 (9.92)	98.90 (9.94)	99.27 (9.96)	99.63 (9.98)
4.0	100.00 (10.00)									

How to read the tables

Let us suppose that we are to find the equivalent scores in percentage scale and 10-point scale for the score 2.75 in the 4-point scale. To get the required values, we consider the value 2.7 in the 4-point scale and then consider the column marked 5. The values along the horizontal line 2.7 corresponding to column 5 are considered. The values are found to be 54.17 and (7.80). The upper value is the percentage value and the lower bracketed on is the 10-point scale value. The other way also the table can be read. Thus, suppose we want to get the equivalent score in the 4-point scale corresponding to the score 58.20 in the percentage scale to get the required value we search out the value 58.20 in the table. Then we consider the marginal values along this row (i.e the score in the 4-point scale) and the column. These values are 2.8 and 4 respectively. Hence, the 4-point equivalent score for the percentage scale score 58.20 is 2.84. The same way we can find the 4-point scale score corresponding to 10-point scale score. Thus, the column numbers are the second figure after the decimal point of the scores in 4-point scale.

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Documentation

Institutions of Higher Education in U.K. and Canada - A Study Report

INDERJIT KHANNA, P. BHATIA, R.P. GANGURDE,
P.H. SETHUMADHAVA RAO AND NIRMAL SINGH

Editor's Note

A study of Institutions of Higher Education in U.K. and Canada was undertaken by a delegation of officials from University Grants Commission and the Ministry of Human Resource Development from India. The Commonwealth Secretariat, U.K. provided the financial support for this study.

Initially this project envisaged a Study of the processes of Financial Management and Resource Mobilisation. As Phase-I of this project, Shri P. Bhatia, Financial Adviser, UGC, visited U.K. in July - August, 1994. (The details of this study is being published here as Annexure-I).

Subsequently, as per the directives of the UGC Chairperson, under phase-II, the scope of this study was enlarged to cover the following aspects:

(i) Financial Management and Resources Mobilisation,

(ii) Management of Higher Education,

(iii) Assessment and Accreditation and

(iv) Vocationalisation and Career Orientation of Courses.

The study under Phase-II was undertaken from the UGC by Shri Inderjit Khanna, Secretary, Shri. R.P. Gangurde, Additional Secretary and Dr. P.H. Sethumadhava Rao, Joint Secretary and Shri Nirmal Singh, Under Secretary, of the Ministry of Human Resources Development. These officials visited several Institutions of Higher Education in U.K. and Canada from 4th to 15th December, 1995.

The Main Observations and Suggestions of the Delegation under phase-II of this study are published here. The detailed notes on the functioning of the various institutions in U.K. and Canada are presented under Annexure-II.

CONTENTS

Page

Main Observations and Suggestions* 87

(i) Financial Management and Mobilization 87

(ii) Assessment and Accreditation 90

(iii) Vocationalisation and Career Orientation of Courses 94

(iv) Management of Higher Education 95

Annexures

I. Study Report on Funding of Institutions of Higher Education in United Kingdom.** 99

II. Notes on Institutions of Higher Education of U.K. and Canada* 115

1.0 *Notes on Institutions of Higher Education of U.K.* 115

1.1 Hull University 115

1.2 South Bank University 116

1.3 Cambridge University 119

1.4 Department of Education, U.K. 121

1.5 Committee of Vice-Chancellors and College Principals 123

1.6 Higher Education Funding Council for England 124

1.7 University of Bath 128

1.8 University of London 129

2.0 *Notes on Institutions of Higher Education of Canada* 130

2.1 Ontario Institute for Studies in Education 130

2.2 Higher Education Group 132

2.3 Ministry of Education & Training 134

2.4 Council of Ontario Universities (COU) 135

2.5 Office for Partnership for Advanced Skills 137

2.6 Concordia University 137

2.7 McGill University 138

2.8 Carleton University 139

2.9 Association of Universities and Colleges of Canada 141

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* By Inderjit Khanna, R.P. Gangurde, P.H. Sethumadhava Rao and Nirmal Singh

** By P. Bhatia

Main Observations and Suggestions*

(i) Financial Management and Resource Mobilisation

1. *Higher Education Policy*: In U.K., the national government lays down the broad policy for Higher Education and provides grants to the Higher Education Funding Council for England (HEFCE) for further distribution. Thereafter, it takes a back seat and HEFCE does the rest.

   In Canada, the federal government has virtually no role in laying down higher education policy. Most work in this area is done by the provincial governments and, hence there is some element of diversity in approach.

2. In both the countries, the current economic situation has necessitated cuts in expenditure across all sectors, and higher education is no exception. This is naturally putting a strain on this sector, but is also forcing universities (a) to increase fees and look beyond the Government to the community, industry etc. for raising resources and (b) to the redesigning of courses, both full-time and part-time.

3. The extent of *government funding* of universities is around 70 to 80%, with *fees* being 15 to 20% and *other sources* around 5%. The first contribution is decreasing yearly, while the latter two are correspondingly increasing.

   - *In India too, we have to move quickly in the direction of increasing fees and raising resources from the community and industry.*

4. In both the countries, it is the government which lays down the tuition fees on a year to year basis. In England it is flat rate, while in Canada it is generally a 'corridor' with a lower and higher ceiling. The lower limit is a must, though in most cases, the higher ceiling is what the universities are actually charging.

   - *In India too, it is felt that to have a uniform approach, the government may fix the tuition fees annually.*

5. An important feature in both the countries is the high fee differential for foreign students. It is roughly 4 to 5 times that for local students, which itself is not very low. There is considerable emphasis within universities to attract more and more foreign students and positive marketing strategies are being adopted to achieve this. There is no limit on the number of foreign students who can be admitted.

   - *We feel that in, India, too, a number of higher education institutions have quality education to offer to foreign students and that too at relatively lesser cost. We suggest that :-*

   (a) *Good institutions must make concerted efforts to attract foreign students particularly from Asia and Africa.*

   (b) *there should be no limit to the number of foreign students to be admitted.*

   (c) *the fees to be charged from foreign students should be much higher than that charged from Indian students.*

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* *By Inderjit Khanna, R.P. Gangarde, P.H. Sethumadhava Rao and Nirmal Singh.*

6. In U.K., the participation rate of students (age 18-23) in higher education has risen sharply in the last 10 years (from 13 to 17% between '83 and '88 and to 30% by 1993), as part of a conscious government policy, with funding linked to students numbers, but now the government has 'capped' it at around 30% since 1993 and it will be so for the next 3 years. Universities not only get proportionately less grants if student enrolment is less, but are also imposed a penalty in financial terms if the enrolment is higher than that fixed by HEFCE.

- *In India we must also move toward a funding pattern for maintenance grant where the core grant is based on student enrolment.*

7. While there was disappointment expressed by universities as regards cuts in grants, one could clearly discern among senior administrators their firm resolve to bridge the gap from other sources and they were making concerted efforts towards this end.

- *In India our senior educational administrators must also try to establish a greater sense of self reliance in their institutions in terms of their financial resources.*

8. Another interesting feature was the clear acknowledgment by senior university academics that since major funding comes from government it is right for the government to expect that its policies be implemented by the Universities. This does not in any way affect their academic autonomy. Government also does not at all interfere in their day to day activities or internal matters.

- *Greater academic autonomy for our institutions and less interference in their administration is necessary.*

9. In UK, the year to year economy cut is indicted by government to HEFCE in the form of an 'efficiency gain'. In fact, after the budget was presented to Parliament recently, the government has indicated to HEFCE the budgets for not only next year i.e. 1996-97 but for two years thereafter i.e. 1997-98 and 1998-99. This has been done along with the expected 'efficiency gain' of 3% next year, another 3% in 1997-98 and another 2% in 1998-99. These are further intimated by HEFCE to the universities who can then plan their resource mobilisation, fee increase, and economies for the next year.

- *In the higher education institutions in India too we need to introduce much greater discipline of economies in concrete terms on year to year basis.*

10. Since Universities mean business in terms of mobilising resources, each invariably has a full time cell of staff (4 to 10 persons) for this purpose. The cell reports directly to the Vice-Chancellor or a Pro-Vice-Chancellor.

- *In India too, our universities need to set up small offices with a few permanent staff for resource mobilisation purposes.*

11. Since Universities in both countries are actively involved in mobilising resources, some of the innovative steps observed are:

(a) attracting foreign students

(b) part-time courses, particularly for manpower development among industry

(c) external programmes

(d) research contracts

(e) providing residences and catering

(f) providing services to the community

(g) Consultancies

(h) Consortia with other universities and industry to be able to draw upon the strengths of one another, for various resource mobilisation activities e.g. courses, consultancies etc.

(i) computer services

(j) catering, and providing venue for marriages.

12. In England HEFCE, is the main source of funding. Its main component is teaching (with a core as the largest chunk), followed by research, capital expenditure and other related funding.

The important features to note are that the grants are largely determined by formula and are provided in the form of block grants. Institutions are free to distribute this grant internally, at their own discretion. Core funding, the major component of teaching grant, is calculated for the next year on the basis of two main factors.

(a) an upward adjustment to take into account the government estimate for inflation.

(b) a downward adjustment, (efficiency gain) which takes account of the relative cost of the council supporting teaching in that institution.

- *In India, based upon the Punnayya Committee report, we are to move toward, a unit cost based funding pattern from the Ninth Plan i.e. April 1997. This effort must be given a greater push.*
- *Our funding should also provide greater flexibility to institutions, who should operate it with a sense of discipline, an operation derived to meet the mission of the institutions.*
- *The funding formula should also incorporate a much greater element of performance based fund.*

13. The calendar followed by HEFCE is worth noting:

April	Council sends its needs to government for next year.
November	Government announces funding.
December	HEI's supply information to HEFCE to enable it to calculate grant.
January	Council decides distribution of funds between main items - teaching, research and other related funding.

February	Council decides distribution of grants to Universities and Colleges.
March	Council announces distribution of grants to Universities and Colleges.
1st of August	New Academic, financial year for academic institutions begins.

14. Research funding, though given by HEFCE to institutions as block grants, is calculated on the basis of a rigorous assessment.

    - *Rigorous evaluation and assessment of research work and funding in India is lacking. This must be introduced immediately.*

(ii) Assessment and Accreditation

Universities in UK amd Canada have given high priority to assessment and accreditation. Given below are some of the salient features of assessment and accreditation systems of UK and Canada:

United Kingdom

1. In some universities like South Bank, Cambridge, Bath etc. they have an internal quality assessment unit of their own. This unit constantly addresses itself to various aspects of research, teaching and learning. The unit reviews students' achievements, the curriculum, the learning process (library, equipment, laboratory etc.), support and guidance, and academic arrangement etc. The assessment also includes ~~direct~~-observations on a wide range of teaching and learning activities, and discussions with the staff ~~and~~-students, standards to be achieved etc.

2. The quality assessment is carried by HEFCE on the basis of a core set of six aspects of provision. They are :-

    (a) Curriculum design, content and organisation

    (b) Teaching, learning and assessment

    (c) Students support and guidance

    (d) Learning resources and

    (e) Quality assurance and enhancement.

3. The universities and the colleges aim to provide teaching of the highest quality across the full range of subjects available.

4. The academic quality assessment is involved in departmental reviews which look at teaching, research, resources, its development, its organisation and management. The review must have an outside expert whose report goes to the Vice-Chancellor and then to the Education Committee. All the external examiners sent their reports to the Vice-Chancellor and these are subjected to close scrutiny. The universities teaching programmes are kept under review by the faculty of concerned. Individual reports are reviewed at least once in a year.

5. The report reflects the quality of teaching, learning and monitoring students progress.

6. The HEFCE is involved in quality assessment of university departments and has conducted it in 10 subjects. All have been graded on three points scale, but there is an incentive for 'excellent' assessment.

7. The self assessment report is first submitted by the universities to the Council. The HEFCE has prescribed rigorous guidelines for a brief and precise document rather than a large rambling one.

8. In order to ensure maintenance of quality, HEFCE has engaged Quality Assurance Committee which scrutinises performance of universities and courses by outside assessors. The quality assessment is being done subject-wise throughout UK. The Committee has completed its work in 15 subjects and has to complete the work in the remaining 54 subjects and has to complete the work in the remaining 54 subjects by 2001 A.D.

9. Funding Council gives grants to courses and if found unsatisfactory, one year's time is given for improvement and if it has still not improved, recommends the university to close down the department.

10. Some universities have set up Quality Assurance Council and Academic Audit Units to improve examination system as well as performance of post graduate students.

11. The HEFCE established in 1992 is a non-departmental public body operating within a policy and funding context.

12. The mission of this Council is to promote quality, effective teaching and research within the higher education sector having regard to national needs.

13. Section 70 of the Furtehr and Higher Education Act, 1992 places upon the HEFCE the statutory obligation to assess the quality of education in funded institutions. This is done by its Quality Assessment Division.

14. Assessment visits are carried out by a team of 4 to 5 experts from other universities and a reporting assessor (who is generally not an expert). The interesting point is that assessors also undergo a week's basic training which helps them in arriving at their judgement quickly. Experts from Industries are also taken. The grading is done on a six point scale. Each department has to get more than one grade if it has to be continued. Even if one department gets one grade, there is a revisit within 12 months.

15. Upto April 1994 there were three grades - Excellent, Satisfactory and Unsatisfactory. The subject judged as unsatisfactory has to be revisited. If the report continues to be unsatisfactory, the universities are asked to close down the department. In April 1994 the grading system was changed. Two changes took place :

    (a) All departments to be assessed have to be visited.

    (b) A core set of six aspects were identified and (indicated in point 2) and each of the aspects evaluated on a 4 point scale. An overall threshold judgement is derived from the profile either as approved or subject to reassessment within a year.

The department to be assessed has to submit a concise profile indicating its aims and objectives, assessment of students learning experience and students achievements, assessment by peer reviw etc.

The Assessment judgments (Effective from April 1995) are based on the following factors :

(i) Relationship with aims and objectives;

(ii) Issue of standards;

(iii) Four point assessment scale - numerical gradings - 1-4 ascending order of merit;

(iv) Graded profiles on attainment of aims and objectives created by applying the-assessment scale to each of the aspects, giving a profile of four judgement grades between 1 and 4;

(v) The overall judgement derived fromthe profile. On the first assessment, the overall judgement is either quality approved or subject to reassessment within a year.

On a reassessment, the overall judgement is either quality approved or unsatisfactory quality.

Subject to reassessment within a year or unsatisfactory quality are triggered by a grade of 1 in one or more aspects.

Subject to reassessment within a year means normal council funding; arrangements continue to apply; Reassessment within 12 months. Unsatisfactory quality on reassessment means withdrawal of funding in whole or part.

16. For each of the subjects assessed so far (15) the HEFCE has brought out a subject overview report in all the aspeacts of departments and this is an excellent document indicating the status fo the departments.

17. It is interesting to note that the calender of assessment is fixed from Monday afternoon to Thursday afternoon.

18. Research grant is calculated on formula

grant = mark x volume (no. of faculty in research).

Any department getting grade one does not receive research grant.

19. ● *The assessment procedure and the document from U.K. is very useful. The NAAC in India could follow this procedure.*

Canada

In Canadian universities the appraisal procedure is innovative as it involves graduate studies at the different universities.

1. There are two appraisal procedures: One is appraisal directed towards the quality of the programme known as standard appraisal and the other is periodic appraisal undertaken once in seven years.

No university offers a course which is not approved.

2. The performance appraisal includes a self study at the institutional level indicating the institution's objectives, resources, students' success at the programme, employment opportunities, research output etc.

3. While the U.K. Government has agreed to cover 30% of the eligible students for higher education, such a percentage is not fixed in Canadian universities. The admission is based on selective criteria.

4. The appraisal process evolved in 1982 at Canada satisfies the need for accountability for graduate programmes.

5. Even though assessment and appraisal is a voluntary process, but still the Vice-Chancellors have agreed not to offer programmes which are not approved.

6. The evaluation of graduate programmes is a key component in the appraisal process. For new programmes, if the appraisal committee is *prima facie* convinced, two consultants are appointed for graduate studies and three for Ph.D. programmes. They go individually and give report to the appraisal committee which recommends to the Council.

7. Appraisal is a historically derived process in Canadian universities for the following reasons:

(a) The expansion of higher education took place during 50s and 60s and the universities were visualised as places of teaching, research and professional development.

(b) The development of graduate studies took place rapidly in different universities. Prior to 1960, graduate study was not well-developed and Canadians had to go either to USA or UK for graduate and doctoral work.

8. The appraisal process helps in deriving a formula funding for the allocation of grants to the universities.

9. The appraisal system satisfies the accountability factor which is a very important one. The appraisal report is a critical judgement of the academic quality of the existing programmes. Funds are provided only to such universities which pass a rigorous appraisal and this Committee consists of senior faculty members from the universities involved in teaching and research. There are four categories of appraisal viz., "good quality, not approved, good quality with report and conditionally approved". Under the 3rd and 4th category the departments have to fulfil the conditions within a specific period of time.

10. In some universities like McGill there is a rigorous system of teachers' appraisal also. Teachers are initially appointed against tenure post on the basis of their work. Only if the teaching and research is outstanding then they get tenure appointments. That too, only after six years. Nearly 20% of the teachers have to leave the institution if their work is not found upto the mark. In the Business Management faculty is as high as 40%

11. The teachers receive support for their research from research Councils.

12. The Association of Universities and Colleges of Canada (AUCC) undertakes the assessment and accreditation of programmes for professional bodies of Engineering, Medicine, Nursing etc. These bodies are responsible for maintenance of standards/quality in their professions.

13. Assessment, which is on a voluntary basis, is almost compulsory in all the universities.

14. The key features of the assessment in Ontario have been:
    - *(a) assurance of quality;*
    - *(b) improvement in graduate programme;*
    - *(c) public accountability as to the standard of graduate work;*
    - *(d) preservation of public autonomy;*
    - *(e) promotion of good practice in programme management and*
    - *(f) consistent with quality, access to a wide range of graduate programmes.*

(iii) Vocationalisation and Career Orientation of Courses

In our view, vocational education is different in both the countries. Hence they are dealt below separately:

U.K.

1. Some of the Polytechnics which were started in early 1960s have been amalgamated to become universities. This change was in accordance with the Higher and Further Education Act, 1992.

2. These Polytechnics offer courses in area such as Business Management, Engineering, Technology etc. which have a very good employment potential. These courses not only are of high quality but also contribute to a great extent in the employment sector. Even courses in Medicine, Dentistry, Nursing etc. are regarded as vocational subjects.

3. The polytechnics converted into universities offer a wide range of vocational courses on a part-time basis also and after they complete the requisite number of credits can transfer to the main stream for obtaining degrees.

4. Even the industries invest in the universities for sponsored research, development, consultancy and other courses which are of vocational nature.

5. The South Bank University offers degree courses such as Occupational Health and Hygiene, Engineering Technology, Computer aided Engineering, Product Design Management, Mass Communication, Nursing and Midwifery - which can be considered as vocational subjects and these are quite successful in the employment sector. The mission of the university is to serve the community, locally and nationally, through its provision of expertise in teaching and research.

6. The Polytechnics in U.K. are notably vocational in nature and they offer a wide variety of full-time and part-time degrees. These have a strong reputation in the field of applied research. Vocational relevance of the subject is a key role in the institutions.

7. Some of the old conservative universities like Cambridge and Oxford offer courses sought by industry, professions, public service and academic world.

Canada

1. Vocational subjects are taught in community colleges in Canada and these are found extremely successful. The Community Colleges offer a wide range of courses like electrician, Nursing, Airline Pilot, Hairstyling etc. These institutions have a Board of Governors from different walks of life who determine the contents and standards.
2. The Community Colleges basically offer service based courses. Other institutions in Canada have a close linkage with business and industry and take care of occupational needs of the student population.
3. An expert from Industry can join the university as an adjunct Professor and vice-versa the University Professor can move to industry for work.
4. A special feature of Concordia University is that they have a distinct programme 'coop'. These institutions in collaboration with industry, run co-op programmes at the U.G. level. They have a high degree of employment potential. The programme is of 10 terms - 6 are offered in the campus and the remaining four at work places like Banks, Industries, etc. The students are absorbed in the employment sector. For the success of the programme the number is limited.
5. The students acquire high degree of skills and communication abilities and can synthesise and analyse information. There is an Institute of Coop. Education in Concordia.
6. An innovative programme at McGill University is the five year degree course at the end of which doctors get an M.D. and M.B.A.
7. On the whole, one can say that Vocational Education is basically imparted in Community Colleges in Canada (23) on a variety of professional courses which are useful and also in the form of coop as at Concordia University, Montreal. On the issue of Community Colleges a team of academics had visited UGA for a month in September - October, 1994. Their report has been considered by the Commission and certain follow up desired thereon.

(iv) *Management of Higher Education*

U.K.

1. In U.K. the British Government is not directly involved in Management of Higher Education in spite of the fact that major funding comes from the Government. The Department of Education of the British Government has the Directors of School Education, Further Education, Adult Education and Higher Education. The Government Department gives policy directives, like the one that participating rate in higher education should be 30% of the population in the age group of 18-25 years and allocates funds to higher education institutions through Funding Councils in consultation with HEFCE and CVCP (Committee of Vice-Chancellors and Principals).

The Government also plays an important role in deciding national pay scales to teachers after negotiations with teachers unions and on the advice of HEFCE and CVCP. The Department of Education carries out labour market forecast.

2. Local Government reimburses fees of British students and also provides maintenance grants depending on the income of their parents. A bill is under consideration of the Government to provide loans to the deserving students pursuing higher education.

3. The University Grants Committee (UGC) role has now been taken over by a statutory body viz HEFCE.

4. The HEFCE has a stuatory duty to ensure that provision is made for assessing the quality of education in institutions whose activities it funds. A Quality Assessment Committee (QAC) advises the Council on its statutory responsbilities and the Council's Quality Assessment Division (QAD) runs the assessment programme. Quality Assessment gives assurance that all education for which the HEFCE provides funds is of approved quality. Where an institution is found to offer unsatisfactory education, it is allowed upto 12 months to remedy the position. If the provision remains unsatisfactory, funding for that subject is withdrawn and the university has to close down the department.

   The council encourages improvement in the quality of education through the preparation of self-assessment reports following each visit and 'overview' reports on each subject assessed.

   These reports describe many examples of good practices and indicate areas with potential for further improvement. They also generate effective and accessible public information on the quality of education offered in all institutions funded by the HEFCE.

   Assessment visits began in 1993 and by summer 1995 the assessment of 15 subjects had been completed.

5. CVCP is a body of the Executive Heads of all U.K. universities with the aim to improve funding, promote public understanding and assist in developing good practices. It works towards formulating common views on matters affecting universities, representing universities in dealing with Government, Parliament, Funding Councils and other national institutions and other organisations. The CVCP is supported through subscription by its member institutions.

   CVCP speaks for universities collectively, provides services of advice and information centrally. It produces guidance and codes of practice on a wide range of topics; publish studies on many aspects of higher education.

6. All universities in U.K. are corporate independent bodies registered as charities enjoying academic autonomy and freedom even though receiving major funding from the Government. Universities are free to raise resources through various measures including undertaking consultancy work for indus-

tries, admitting overseas students with higher fees, collecting endowments and donations, conducting continuing education programmes etc.

7. The Vice-Chancellor is appointed by the Governing Body of the university even from the foreign nationals. The governing board of the university comprises many educationists. There are variations in the universities about the positions of Pro-Vice-Chancellors, Dy. Vice-Chancellor, Principal etc. In the University of Hull there are Pro-Vice-Chancellors nominated by the teachers. In London University there is Pro-Chancellor, Deputy Vice-Chancellor and Principal. There are Finance Committee, Senate and various other committees. There is no central planning mechanism but a forecast plan is prepared with the help of teachers and Heads of the Departments. Implementation of university development programmes are undertaken once resource availability is known.

8. Heads of the Departments are responsible for planning and development of the department, preparation of research projects and evaluation of teachers. Heads of the Departments are paid 4000 Pounds p.a. additional pay. Teachers who are not performing satisfactorily are asked to go on the recommendation of the Head of the Department.

9. Educational Administrators are experts in their fields—like Secretary Administration, Director Finance. Registrar is an academic person. University Administration holds joint consultative committee meeting with different employees' unions regularly and enters into contract or agreement.

10. Academic staff is getting national pay scales after negotiation between Government and teachers union and in consultation with HEFCE and CVCP. However, pay is negotiable with every individual. There are five levels of teachers-Probationer, Lecturer, Senior Scale Lecturer, Reader and Professor. Every teacher is expected to devote 1/3 of his time for research. Universities generally appoint reputed persons as teachers and give them lot of autonomy in academic matters. In some of the universities teachers are provided short-term training during their service.

11. Every university is aware about the mission of the university and all efforts are concentrated to achieve the objectives mentioned in the mission statement of the university.

12. Universities are making special efforts to admit part-time and overseas students and to undertake contract research useful for industries. Special officers are appointed for this purpose.

Canada

1. In Canada, education including higher education is a responsibility of Provincial Government and Federal Government role is minimal except earmarking funds to higher education while making allocation to Provincial Government from the federal revenue collection.

2. The Ontario State Government has set up OCUA (Ontario Council of University Affairs) consisting of 20 members appointed by the Government,

which makes allocation to universities and colleges based on formula worked out. 50% of the members are from Academic and 50% from Private.

3. The Universities are autonomous. Chancellors and Vice-Chancellors are appointed by the University Board of Governors.

4. The AUCC (Association of universities and colleges of Canada) has 88 members represented by President or Rectors of Universities and Colleges. AUCC advances the interest of university community by providing forums to identify new and emerging issues to debate, to offer services to universities to achieve their goals, to foster international academic co-operation and international exchange programmes and in developing linkages with Canadian Universities with each other and with their strategic partners. AUCC advocate enhances federal support for university research through research funding councils.

5. The Universities in Canada are multi-faculty organisations having schools and colleges. Colleges are conducting undergraduate programmes but universities are conducting U.G. as well as P.G. and research Programmes. In Canada, U.G. programme is called Graduate Programme and beyond Graduate Programme, Master's and Ph.D. Programmes are conducted.

Annexure I

Study Report on Funding of Higher Education Institutions in United Kingdom

P.BHATIA

Contents *Page No.*

1. The Higher Education Sector 100
   - (i) The Sector prior to 1992 100
   - (ii) The current Sector 100
   - (iii) Higher Education Funding Councils 101
     - (a) Higher Education Funding Council for England (HEFCE) 101
     - (b) Scottish Higher Education Funding Council (SHEFC) 102
     - (c) Higher Education Funding Council for Wales (HEFCW) 103
2. Grants to Institutions 105
   - (a) Recurrent Grant 105
   - (b) Teaching related grant 105
   - (c) Margin Funding 106
   - (d) Funding for Research 107
   - (e) Non-Formula Funding 107
   - (f) Capital Grants 108
   - (g) Equipment Grant 108
3. Other Income Sources of Higher Education Institutions 109
4. Statement of Accounting Policy 109
5. Financial Memorandum 110
6. Audit and Audit Committees 111
7. *Comparative Study of Funding Systems followed in Higher Education Council and University Grants Commission India* 111

(1) The Higher Education Sector

(i) The Sector Prior to 1992

1. Higher education institutions in Great Britain come from varied backgrounds having been founded as Universities, Polytechnics or Colleges. They vary in size and complexity. All have charitable status, though not all the 'exempt' charities, and some are companies limited by guarantee. Higher Education Institutions form a separate identifiable group with special characteristics and are therefore not within the scope of Statement of Recommended Practices (Accounting Standards).

2. The higher education sector in Great Britain has undergone considerable change over the past decade, having been the subject of Green Papers, White Papers and legislation. Until 1989 higher education operated across the 'binary' line with universities receiving government grants earmarked from the Department of Education and Science through the University Grants Committee, while polytechnics and colleges of higher educations were funded through local education authorities. Voluntary colleges received funding directly from the Department of Education and Science.

3. The first indications that these arrangements were to be changed fundamentally was heralded in the WHITE PAPER ON HIGHER EDUCATION: Meeting the challenge (Cmnd 114) which was enacted by the Education Reform Act 1988, while this retained the distinction between the Universities on the one hand, and polytechnics and colleges on the other, the latter were now to receive direct funding from government like the universities. Separate funding councils were established to deal with the two areas of higher education, the UNIVERSITIES FUNDING COUNCIL and the POLYTECHNICS AND COLLEGES FUNDING COUNCIL, but these were to have a limited life.

4. In May 1991 the Government published another WHITE PAPER ON HIGHER EDUCATION: A NEW FRAMEWORK (Cmnd 1541) which when it became legislated as the Further and Higher Education Act, 1992 established the current higher education framework. This proposed a single funding structure for universities, polytechnics and colleges.

(ii) The Current Sector

5. Major changes in the structure and organization of higher education in Great Britain took place in 1992. The former polytechnics and some other higher education institutions have become universities and the funding arrangements were changed.

6. The Further and Higher Education Act, 1992 redrew the higher education map and changed the nature of many institutions in the Sector. From 1 April, 1993, three new funding Councils were established to assume responsibility for allocating grant to all Higher Education Institutions in their geographical area. The new funding Councils are:

(a) The Higher Education Funding Council for England (HEFCE)

(b) The Scottish Higher Education Funding Council (SHEFC)

(c) The Higher Education Funding Council for Wales (HEFCW)

7. A further important change introduced by the 1992 Act was that polytechnics could seek permission from the Privy Council to award their own degrees and could assume the title of university. Without exception every former polytechnic now has a university title.

8. On the establishment of these funding arrangements some institutions considered their position and decided to merge with other larger establishments. In addition some former education colleges have now been granted the status of university, for example, the University of Derby and the University of Luton.

9. In the Northern Ireland, the province's two universities continue to receive their funding through the Department of Education Northern Ireland (DENI). In 1993, a *Northern Ireland Higher Education Council (NIHEC)* was established.

10. In 1992-93 the higher education sector in England funded by HEFCE included total of 148 universities and higher education colleges. There were further 21 in Scotland, 16 in Wales and 4 in Northern Ireland making a total of 189 in the U.K.

(iii) Higher Education Funding Councils

(a) Higher Education Funding Council for England (HEFCE)

11. The Higher Education Funding Council for England (HEFCE) was established on 6 May 1992 under the terms of the Further and Higher Education (FHE) Act, 1992. The HEFCE is a non-departmental public body operating within a policy and funding context set by the Government.

Structure

12. The Council employs around 180 staff at its headquarters in Bristol. The Directorate consists of the Chief Executive and four Directors. Officers in the Council's Institutions and Programmes Division (IPD) provide the main point of contact with institutions receiving funds from the Council. IPD has three terms, each with responsibility for institutions within the geographical areas, and for certain subjects and functions.

13. Council members, including the Chairman and Chief Executive, have collective responsibility for the control and management of the HEFCE as a corporate body. The council is responsible for developing policies and ensuring that projects, programmes and activities undertaken by the HEFCE are consistent with the overall provisions of the FHE Act and any guidance or directions issued by the Secretary of State.

Functions

14. The HEFCE is the largest single source of funding for higher education in England. Funds are provided in exchange for teaching and research and are conditional on their delivery. The funding methods were agreed after full consultations. Their transparency provides institutions with open and fair basis for planning.

15. The council main functions are: (a) To advise Secretary of State for Education on the Funding needs of Higher Education; and (b) distribute available funds.

Accountability

16. The formal relationship of the Council with the Department for Education is set out in a Financial Memorandum and a Management Statement.

17. The Secretary of State for Education is accountable to Parliament for the HEFCE's activities. Parliament also exercises oversight and scrutiny of the council through the Comptroller and Auditor General, the head of the National Audit Office. The Comptroller & Auditor General is responsible for auditing the HEFCE's accounts and for examining the economy, efficiency and effectiveness of the HEFCE's use of resources.

18. The HEFCE's Chief Executive is the Accounting Officer for the funds made available to the Council by the Secretary of State. As Accounting Officer, the Chief Executive may be required to appear before the Public Accounts Committee of the House of Commons.

19. The HEFCE operates a policy of openness and transparency in its dealing with higher education institutions. All the funding methods have been published after extensive consultation and allocations to institutions are also published in detail with the underlying data having been provided by and verified with the institutions.

Relationship with other Bodies

20. The HEFCE works closely with the other higher education funding bodies in the U.K. and the Further Education Funding Councils. The Council regularly consults with the institutions' representative bodies and collaborates with them and the other funding bodies on a number of joint initiatives.

(b) Scottish Higher Education Funding Council (SHEFC)

21. The SHEFC was set up in June, 1992, under the Further and Higher Education (Scotland) Act to provide financial support for teaching, research and associated activities in Scottish higher education institutions.

22. There are currently 21 such institutions funded by SHEFC (other arrangements are in place for the open university and the Scottish Agriculture College). The Council is a non-departmental public body responsible to the Secretary of State for Scotland through the Scottish Office Education Department.

Main Functions

23. The Council's main functions are to:
    - (a) Distribute funds to support teaching and research in higher education institutions.
    - (b) To assess the quality of higher education supported by the Council.
    - (c) To provide the Secretary of State for Scotland with the information and advice relating to all aspects of higher education in Scotland.
    - (d) To project the financial needs of the higher education sector.

24. Responsibility for higher education policy in Scotland rests with the Secretary of State. However since, the establishment of the Council it has developed its own policies and strategies across the range of its responsibilities within the broad framework of government policy for higher education.

Auditors

25. Under Section 14(3) of Schedule 7 of the Further & Higher Education (Scotland) Act, 1992, the Comptroller & Auditor General is required to examine, certify and report on the Statement of accounts and lay copies before each House of Parliament.

(c) Higher Funding Council for Wales (HEFCW)

26. In Wales, until the advent of the HEFCW the only source of recurrent public funding for research (as opposed to project funding) was the Universities Grants Committee (UGC) until 1989, and subsequently the University Funding Council (UFC). Both provided support only for university institutions. The grant was not divided between teaching and research. The grant was based in large measure on the updating of a historic level of funding. Various assumptions were made as to the proportions of funding spent on research and it was recognised that this varied from one university to other. The grant under the UGC was on block grant to universities.

27. The HEFCW is an executive Non-Departmental Governmental Body established in May 1992 under the Further and Higher Education Act, 1992. The sponsoring department of the Council is the Welsh Office.

Functions & Responsibilities

28. (a) The council is responsible for the administration of funds made available by the Secretary of the State for Wales in support of the undertaking of research by higher education institutions in Wales.
    - (b) Provision of prescribed courses of higher education in local authority or further education institutions in Wales.
    - (c) Performance of such supplementary functions as are required of it by the Further & Higher Education Act, 1992.
    - (d) The council may be required to assume additional responsibilities as may be directed by the Secretary of State.

(e) The council provides confidential advice to the Secretary of State on the needs and aspirations of the Sector through its annual Public Expenditure Survey Submissions.

(f) The relationship between the council and the Welsh office is governed by a Management Statement which includes a Financial Memorandum.

(g) The Council is required to produce a rolling Four Year Corporate Plan and an annual Operational Plan.

(h) The Council assumed responsibility for funding the higher education sector in Wales on 1 April, 1993.

Audit

29. Under the Act (Further & Higher Education Act 1992), the Comptroller & Auditor General is required to examine, certify and report on the statement of Account, and lay copies before the Parliament. The Accounts are audited in accordance with the Auditing Standards issued by Auditing Practices Board.

Financial Monitoring & Audit

30. It is the part of Council's responsibility both to ensure that institutions make correct use of funding which it provides and to monitor the financial health of institutions. The Council's financial relationship with institutions is governed by a financial memorandum for each institution. This sets out the terms and conditions of funding common to all institutions and cover such matters as the responsibilities of the Governing Body and the Chief Officer, controls on borrowing. Within the financial memorandum an annual schedule is prepared giving the terms and conditions of grant in a particular year. In order to fulfil its financial monitoring duties, the Council, has established a pattern whereby it requests *financial forecast as part of the general strategic planning information* in June, *audited accounts* in December and a *mid year uptodate on the financial forecast* in March.

31. The Welsh Funding Council (the Higher Education Funding and the Further Education Funding council for Wales) has a joint audit service which has the joint responsibilites both in relation to the Council and the institutions which are funded. During 1993/94, the Council issued an Audit Code Practice for the Higher Education Sector following consultations with the institutions and their auditors. The code sets out the framework for audit and provides details of good practice in relation to audit Committees, external and internal audit.

32. The Council is also responsible for ensuring that Value For Money (VFM) is obtained from the Public Funds which it provides. In 1993 a consultation paper was issued which proposed a sector-wise approach to VFM jointly with England & Scotland.

Relationship with the Sector

33. The Chairman and the Chief Executive visit all the institutions in the Sector

and other officers also regularly visit after chalking out a planned programme. The Council also requests strategic planning information from institutions each year.

34. The Council aims to be as open as possible about its own activities, informing the Sector of its decisions through circulars, and newsletters and seeking its opinion on a wide range of issues raised in consultation documents. The Council produces an annual operation plan for its own guidance and also a four year rolling corporate plan the latter is made available to institutions for using it in developing their own plans. A number of staff from institutions either serve on Council working groups or represent the Council is able to take advantage of their experience and expertise.

35. As a well establishing positive relationship, the Council undertakes *two annual surveys on student enrolment*, a *forecast for the beginning of the academic year* and an *end of year monitoring survey. Regular summaries* are prepared and published for information.

(2) Grants to Institutions

36. The basis on which the funding is provided is marked in the *'funding agreement'* which forms part of the Financial memorandum between the Council and each institution. The funding Council made it clear that grants are in exchange for teaching and research and are conditional on their delivery.

37. Although the funding Council uses a number of elements and factors in deciding how to allocate grant to institutions, recurring grant is still regarded as a block grant.

Teaching Related Funds

38. The Council has developed a funding method for teaching based on the principle of the provision of academic and financial stability from year to year, the promotion of efficiency cost effective expansion; the maintenance and enhancement of quality; and recognition of institutional diversity and mission.

39. The method of funding is based on a core-plus margin approach. Institutions are guaranteed a very high percentage in real terms of the previous year's funding. In return for this guaranteed funding, the 'Core' the institutions are expected to maintain the number of home/Europian Union Student enrolments. The remaining funds - the margin - is distributed on competitive basis.

The Core

40. Overall the core funds consist of the previous year's funds increased by the Government's forecast of the gross domestic (GDP) deflator, to take account of inflation and reduced by a percentage which varies from institution to institution.

41. Funding for teaching is calculated using funding cells. These cells are defined by:

11 Academic subject Categories; 2 modes of study; (a) Full time (FT) & Sandwich, (b) Part time (PT); 2 levels of Study: (a) Undergraduate & Postgraduate, (b) postgraduate research (PGR). The teaching funding allocations are based on a maximum of 44 funding cells (11 x 2 x 2). The number of funding cell in which any institution receives funding is determined by the mix of subjects and courses offered, the type of students taking those courses and the different levels of study. Larger universities are active in most of the funding cells, smaller, more specialist colleges are active in only a few.

42. Each institution, in December supplies information on how it has distributed its current year's Council funding and student numbers between funding cells. The data thus generated are then used by the Council to calculate each institution's grant for the following year. Funds are allocated by the Council as block grant to be spent at the discretion of the institution. It is for the institution to decide how much grant to allocate to each cell taking account of the number of students and its won priorities.

43. In recent years the Government has required institutions to become more efficient and has therefore provided less money per student. This downward adjustment of 'efficiency gain' is passed on to institutions by the Council through the funding method.

44. A competitive element is provided by the Average Unit of Council Funding (AUCF) for each institution in each funding cell. The AUCF is calculated by dividing the amount of Council funding in each funding cell by the number of students in that cell. The AUCFs allow comparisons in levels of funding to be made between institutions for each funding cell.

45. Core funding for the following year in each funding cell is affected by two factors. (i) An upward adjustment to take account of the Government's estimate for inflation (for 1995-96 it is 3.27 percent) to produce inflated core funds. (ii) a downward adjustment, which takes account of the relative cost to the council (as measure by the AUCFs) of supporting teaching in that institution.

46. For each cell, cheaper institutions (those with lower AUCFs) are rewarded by receiving a smaller downward adjustment. Conversely more expensive institutions - those with relatively high AUCFs - receive a larger downward adjustment. The adjustment for 1995-96 ar in the range of 0 to 3 percent.

The margin Funding

47. The Council determines the funds available for growth in student numbers in the light of the total funds made available by the Secretary of State and announced in Autumn statement. The major part of the funds for growth are distributed by the Council through competition based on actual performance in the current academic year. Margin fund is distributed by formula

and through "core proposals" whereby institutions bid for additional students in response to specific programmes. Those institutions with the lowest AUCFs in these funding cells will receive the highest proportionate increase in their funds as margin funding.

48. The sums of money are then converted into student numbers using the individual AUCF for each institution in each cell. These are then added to the current year's student numbers supported by the Council to determine the following year's contract student numbers.

49. In the present period (1995-96) of consolidation there were no funds made available to expand full-time student numbers. The council has allocated 4 million Pounds in 1995-96 for growth in the part time provision, distributed through the part time funding cells.

50. The council decides to support certain areas of teaching by inviting institutions to make proposals for additional students in response to specific programmes. Past examples include support for higher education in geographically remote areas, two year vocational diploma course in science, engineering and technology.

51. Institutions can bid for money for core proposals in funding cells in which they are not currently active. Funding allocated to institutions whose bids are successful is incorporated into their core funding in the following year.

52. The Council has decided not to fund any new core proposals in 1995-96.

Funding for Research

53. Universities and colleges in United Kingdom are collectively the main national providers of research. The quality of their work has given the U.K. a leading position in the World Research Community. Higher Education Funding Council for England is funding to support basic research and underpin the 'dual support' system, by which institutions receive public funds from the Council and through proper grant from the Research Councils. HEFCE funds provide for the cost of the research infrastructure required to ensure the longer-term stability essential to the maintenance of research, particularly, in the established research institutions. In some subjects, specially the humanities, the Council provides the bulk of the resources for research.

54. Public funds for research are provided for salaries of permanent academic staff, premises and central computing costs. The Research Councils provide funds for direct project costs and make a contribution to indirect project costs.

Non Formula Funding

55. The Council recognises that not all teaching research and related activities can be adequately supported through formula funding. Each year the Council provides non formula funding for a wide range of purposes, including the additional costs of operating in the London area; liabilities inherited by institutions previously under local authority control, copyright libraries, museums, galleries and collection and minority subjects. The funding is

renewed regularly and wherever appropriate funds are either phased out or incorporated into formula based allocations.

Special Invitations

56. Special invitations and some programmes of continuing education are also supported by non formula funding. Present examples include, support for library development, the teaching and learning Technology programme for students with special needs, continuing vocational education and continuing education which is neither vocational nor award bearing.

57. Institutions either bid for special initiatives funding individually or for some projects. They may be encouraged to submit joint bids with other institutions. It is a condition of funding for most projects that they make the results widely available. Funding for special initiatives is for a special length of time and is not incorporated into core funding in the following year.

Flexibility

59. In addition, the Council sets aside a small amount of funding for unforeseen events and to provide flexibility during the year.

Capital Grants

59. Grants for building projects is made available by the funding council from within the capital resources provided by the Secretary of State. The council aims to help institutions maintain and develop their estate (land and buildings) and their equipment. Capital funding comprises estate and equipment funds distributed by formula; and funding for specific building and maintenance projects.

60. More than 70 per cent of capital funding is distributed by formula and is paid as a single grant for estate expenditure and equipment purchase. The total for each institution consists of a minimum (floor) amount, plus a sum calculated to reflect the level of teaching and research activity.

Building Maintenance

61. Building maintenance funding helps institutions meet the backlog of long-term maintenance. This funding is provided for a fixed number of years based on surveys carried out on behalf of the council.

Equipment Grant

62. Equipment grant is allocated by HEFCE from within the capital resources provided by the Secretary of State. In developing a new method for the allocation of capital equipment grant, the council regards such grant for the purchase of equipment as available for capital expenditure and assets with a life of more than twelve months, other than building, that are used for teaching, research and/or administration.

63. The method of funding capital equipment agreed by the council has following main features :

(i) There are three elements to equipment grant - a floor element, providing a flat sum of all institutions, an element for teaching and an element for research. Ten percent of the total is used for the floor element and the ratio between the element for teaching and research is 70:30, reflecting the distribution of recurrent funds.

(ii) The calculation of the teaching element has been based on each of the academic subject categories (ASC) at a rate per ASC. Part time students have been weighted 0.5 and postgraduate student 3.

(iii) The distribution of the research element is based on three components. The majority is based on the method for allocating QR in the recurrent funding formula.

(iv) A weighting of 1.25 is applied to all specialist colleges.

64. One twelfth of an institution's annual equipment grant is available for claim each month. To encourage matching funding of scientific equipment by industry on the one hand and the public sector on the other, the grant for 1993-94 was released to each institution only when matched industrial income was received.

(3) Other Income Sources of HEIs

65. Funding Council grant, currently remains the single most important income source to institutions. However, the diversification of income sources remain a common aim of all institutions. Substantial sums of income are earned by many higher education institutions by contracting directly with organisations which are empowered to purchase educational services. The nature of contracts will vary dependent upon the purchasing organization. In addition, other sources of income available to an institution are: (a) The higher education institution can hire out the facilities. Any of the facilities owned by an institution may be hired out whether this is single room for a meeting, a lecture theatre for specific talk, laboratory or workshop facilities for specific agreed project or even institution's car parks, play ground for matches, library and where specialist equipment is owned it may be that such equipment is hired out to local industry/commerce. (b) Sale of products, franchising, sale of items surplus to requirement and waste, investment income, other income sources such as catering and residence, specialist courses and other services which are quasi-trading in nature.

(4) Statement of Accounting Policy

66. Major changes in the structure and organization of higher education in Greater Britain took place in 1992. The former polytechnics and some other Higher Education institutions have become universities and the funding arrangements have also changed. Instead of a single funding body for all universities in Great Britain, there are three territorial funding councils.

67. These changes together with recent changes in accounting standards, led to a review of the presentation of the accounts. The Higher Education

Institutions in Great Britain resolved that there should be a single Statement of Recommended Practice (SORP) for Accounting in Higher Education Institutions and set up a joint working party to produce it.

68. The joint working party built on the excellent prepatory work of the Accounting Standard Group of the British University Finance Directors Group (BUFDG) to produce revised statement of Recommended Practice which has received a statement of negative assurance from the Accounting Standards Boards and has the approval of three territorial funding councils.

69. It has been recommended that the accounts of Higher Education Institutions should, as far as possible, be prepared on a similar basis to the accounts of other Corporate organisations. The published Financial Statements of institution should give a true and fair view of the institution's financial position if the statements are to be of use or relied upon, by users, or potential users, of the information contained therein.

70. As per the recommendation, every Higher Education Institution is to prepare an annual basis report and financial statement which is to include a treasurer's report (or equivalent), a statement of accounting policies, an income and expenditure account, a balance sheet, a cash flow statement, a statement of total recognised gains and losses and notes to the accounts. The report and financial statement should include the report of the auditors.

71. The Accounting Standard Boards (ASB) has confirmed that the (SORP) has been developed in accordance with the ASB's code of practice and does not appear to contain any fundamental points of principle which are unacceptable in the context of current accounting practice or to conflict with any existing or currently contemplated accounting standard.

(5) Financial Memorandum

72. The memorandum sets out the terms and conditions for the payment by the HEFCE of funds to the Governing Body (name of the institution) out of funds made available by the Secretary of State for Education.

73. The memorandum is set out in two parts. The first part sets out the terms and conditions which apply in common to all institutions funded by the Council. The second part,.the schedules consists of conditions specific to the institutions, a schedule of funds available in the academic year and the educational provision the institution has agreed to make in return for those funds.

74. The memorandum lays down: (i) Duties and Powers, (ii) Responsibilities, (iii) Allocation of Funds, (iv) Payment of Funds (Recurrent and Capital Funds), (v) Subscription to Higher Education Statistics Agency (HESA) (vi) Financial Management, (vii) Property Acquisition and Disposal of Land and Building, (viii) Borrowing and Leasing, (ix) Financial Statements, (x) Research Contracts and other services, (xi) Audit, (xii) Provision of information, (xiii) Repayment, (xiv) Other matters (Insurance, Revision Interpretation, (xv) Circumstances under which an institution may retain proceeds of sale or rental income.

(6) Audit & Audit Committees

75. While the responsibility for devising, developing and maintaining control system lies with management, internal audit has a key role in providing a service to the institution and giving assurance on the adequacy and effectiveness of the internal control system. It also assists in ensuring value for money.

76. The Funding Council requires institutions to appoint audit committee and provide for integral and external audit in accordance with the Audit Codes of Practice published by the HEFCE and HEFCW in 1993.

77. The Audit Code of Practices specifies that the audit committee shall consist of at least three members of the governing body and that, in order to preserve their independence, members of the audit committee must not have any executive responsibility for the management of the institution. At least one member of the Committee should have a background in finance and accounting. The committee can co-operate members with particular expertise.

Comparative Study of the Funding Systems Followed in Higher Education Council and University Grants Commission India

Organisation

78. The Funding Councils are headed by part-time Chairman and Full time Chief Executive appointed by Government.

79. UGC is headed by full time Chairperson appointed by Government of India, Ministry of Human Resource Development.

80. **Members** of the Higher Education Funding Council in England are appointed by Department of Education for a term of 3-4 years. They are paid 4000 Pound p.a. and their other TA/DA expenses.

81. The Members of UGC are appointed by Government of India, Ministry of Human Resource Development for term of 5 years. They are not paid any salary. They are paid TA/DA expenses of their stay and travel. They are also reimbursed expenses on account of telephone and other contingent expenditure. HEFCE have **Special committees** for making suggestions and advice on the various academic matters. Members of the Council are associated in the Committees.

82. The UGC members are nominated on various committees for specific subjects/ items.

83. A model '**Code of Best Practice**' for members of the Higher Education Funding Council for England has been prepared and circulated.

84. **No such model is prepared for members of the Commission.**

85. The Committee of University Chairmen have published a Guide for members of Governing Bodies of Universities and Colleges in England and Wales. This guide is intended to assist members of governing bodies of universities and colleges of higher education in England and Wales in the performance of their

duties. The guide defines the role of the governing body. It outlines the legal status of institutions and their structures of governance, and considers responsibilities of members of governing bodies towards their own institutions, to Government and Parliament and to the wide community.

86. No such guide has been published by UGC in India.

87. In U.K. a committee of Vice-Chancellors and Principals of the Universities was founded in 1918 as a company limited by guarantee with charitable status. This consists of the executive heads of all U.K. universities. It exists to promote, encourage and develop universities in the U.K. It aims at improving the funding, regulatory and working environment within which U.K. universities pursue their diverse missions. It also promotes public understanding of the roles, achievement, needs and objectives of U.K. universities.

88. It works by formulating common view on matters affecting U.K. universities collectively, representing the universities in dealing with Government, Parliament funding Councils, other national institutions and organisations and individuals world-wide. It provides information and central services.

89. In India Association of Indian Universities (AIU) is the co-ordinating body which has served the universities for over seven decades. Its membership embraces all types of institutions viz. traditional universities, agricultural universities institutions of technology and those devoted to medical education and research. It provides its members with a forum of discussion of their common problems as also a clearing house of information on higher education in the country.

Funding

90. The funding of Higher Education Institutions in United Kingdom is done through three Higher Funding Councils set up under the Further Education Funding Act 1992, w.e.f. 1 April, 1992. Prior to 1992 the funding was done through University Funding Council and University Grants Committee.

91. The funding of Central Universities Deemed Universities, Delhi Colleges etc. is done through UGC established in 1956 under the Act.

92. For funding the Higher Education Institutions a **Formal Financial Memorandum** is signed between HEFCE and HEIs: The memorandum lays down the terms and conditions for release of funds. The council places a number of requirements for financial accountability on the institutions as a condition for the award of funding.

93. No such Financial Memorandum is signed between UGC and institutions. The terms and conditions of grant are prescribed and laid down in each sanction letter.

94. **The grants are provided by the Council for Teaching, Research and maintenance of students. This is calculated with reference to the number of students being taught every year.**

95. The Non Plan grant is provided to Central Sector institutions on historical budgeting system i.e. on incremental budget system without taking into

account the number of students being taught in each institution.

96. **Capital and Equipment Grants** and maintenance of building grants are calculated on Formula basis. These are also related to teaching, research etc.

97. Capital and Equipment Grants are provided out of the Plan Grants based on the specific proposals/projects.

98. Higher Education Funding Council **meetings** are held at least 10 times in a year.

99. UGC meetings are held 10-12 times in a year.

Accounting Practices

100. The payment/transfer of funds from the HEFC is done monthly through bank electronically. There are no separate sanctions issued for each scheme. No bills are called from the HEIs. No receipt of funds also called for. Funds are transferred without delay. These are normally received by HEIs on the same day.

101. In the UGC we are following a system of issue of sanction for each release. The payments are made on receipt of TR-42 bill. Payments are arranged through bank drafts. There is lot of delay in this system.

102. Reconciliation of Payments and Receipts to Higher Education Institutions is done on yearly basis.

103. There is no system of reconciliation.

104. All Higher Education Institutions are required to maintain their accounts and prepare their Annual Accounts with reference to the Statement of Recommended Practice (SORP). They are expected to follow uniform system of accounting.

105. UGC has not prescribed any standard of uniform Accounting System.

Auditing

106. The HEFC's have internal audit service. The audit group visits the HEIs and examine their financial systems and report thereon. The audit staff is appointed from the qualified management accountants/Chartered Accountants. A detailed Audit Code has been prepared by the Councils. The audit teams report on the specified items of the systems for which a detailed format has been prepared.

107. In the UGC an internal audit cell has been established recently. We have not prescribed any check list and audit code.

110. HEFCE has an **Audit Committee** responsible for reviewing and advising the Council's Accounting Officer and through him, the Council itself on various procedures and processes for ensuring the effectiveness of the financial and other control systems - including those for ensuring the proper protection of assets - within the Council itself and institutions. The Committee is also concerned with the Planning, operation and follow up

action arising from the councils' Audit Services annual report and value for money audit.

109. UGS does not have any audit committee.

Transparency

110. HEFCs follow a transparent system of financial management and allocation of funds. In the beginning of the year a detailed circular is sent to all HEIs intimating the total budget allocated to them. Such system is not being followed by UGC. We are just informing the institutions of their total budget allocation.

Quality Assessment

111. For the maintenance and improvement of quality at all levels, in institutions of higher education in the U.K. Higher Education Quality Council provides services for all the universities and colleges education comprising :

Quality assurance, including the regular auditing of the ways in which institutions discharge their responsibilities for standards and quality.

Quality enhancement, including the dissemination of good practice, quality issues in higher education. The Quality Assurance Group (Q.A.G.) scrutinises institutions' quality assurance mechanisms with a view to ensuring public accountability for the maintenance and improvement of academic quality and standards.

112. For assessment and accreditation in higher education in India, UGC has set up National Assessment and Accreditation Council in September, 1994. The mission of this registered society is to contribute to the maintenance and improvement of quality, at all levels of teaching and research in institutions of higher education in India. Through its activities it would encourage self-evaluation, accountability and innovations in higher education on a voluntary basis.

Notes on Institutions of Higher Education in U.K.*

1.0 NOTES ON INSTITUTIONS OF HIGHER EDUCATION IN U.K.

1.1 Hull University

The University is a registered charity with a Royal Charter (Act of Parliament). It has about 10,000 students of which over 800 are foreign students from 100 countries. Its total staff numbers around 2000 of which about 800 are academic (including support staff) and 1200 non-teaching staff. In addition, annually about 1500 persons are appointed on contract for short-term assignments. About 4500 students stay on the campus. Interestingly, due to more competitive rates outside, a recent phenomenon is the reduction of demand by students for campus accommodation, resulting in vacancies.

The annual budget of the University is around 61.5 million. About 75% of university money is from public funds, plural funding, coming essentially from

(a) Higher Education Council for England (HECFE) for teaching and research,

(b) from research councils (funded by government) for specific research projects and

(c) from local bodies as student fees.

95% of the research component from HEFCE is in response to external grading of research work, done department-wise. It is done for each teacher every 4 years. Faculty is expected to spend one third of their time on research. This research grant from HEFCE is in the form of a block grant as distinct from project related grant from the research councils.

The guiding factors in deciding Government funding is the number of students fixed for each university and department, by the Government annually. The present target is to have one third of the students of the age group 17-23 enrolled in Universities. The university is not normally at liberty to increase the student intake since funding is dependent threreon. HEFCE imposes a penalty if the university admits more students than that prescribed by the Government.

Since more than 75% funds come from Government, the university academics acknowledge that it is right for the Government to expect its policies to be implemented by the Universities. This does not affect their academic autonomy.

The national financial year is from 1st April to 31st March, but that of the University is from 1st August to 31st July. This difference did not seem to pose any problem in financial management. The Government presents its budget to Parliament normally by the end of November, giving universities a good four to eight months to plan for the coming year.

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An interesting feature of the structure was the differential fee from U.K. nationals and foreign students which was introduced 20 years ago. At undergraduate levels, the tuition fee structure is:-

	Arts	*Science*
U.K. nationals	750 Pounds	1600 Pounds
Foreign students	5800 Pounds	6900 Pounds

This differential fee structure, apart from raising a sizeable resource for the University also indicates that foreign students are indirectly subsidising the cost of local students.

The University has a very strong international office where the main effort is to market their courses abroad. Three full time administrators have been appointed for the purpose, one each for USA, Europe & Asia. Their efforts are supplemented by those of the regular faculty.

In order to raise resources, the University authorities, make available at cost, their infrastructure and services to the community and industry. Examples include computer services, catering services, site of marriages, in service training (MDP's) for personnel in industry, consultancies etc.

The syllabii are looked into and revised once every three and half years.

Academic posts are at five levels. Initial appointment is on probation for 3 years, then Lecturers, Senior Lecturer, Reader and Professor. The University organises training for its staff and faculty. The pay scales of teaching staff, are nationally negotiated. They have a personal professorship scheme. The pay scale of a Professor varies from 30,000 Pounds to 40,000 Pounds per annum while that of Vice-Chancellor is around 1,00,000 Pounds.

1.2 South Bank University, London

The South Bank University was founded in 1892 as the Borough Polytechnic, and in 1970 amalgamated with three other colleges to become South Bank Polytechnic. The 1992 Higher and Further Education Act provided that Polytechnics would be eligible to change their title to University, subject to Privy Council approval, and would become degree-awarding bodies. In pursuance of this, the name South Bank University was adopted in June, 1992.

The "Mission Statement" of the University postulates that the institution exists to serve the community, locally and nationally, through its provision of expertise in teaching and research. It imparts high quality teaching on courses which provides students with rewarding employment possibilities and equips them with qualifications which enable them to contribute both to wealth creation and to the quality of national life. The institution maintains high standards in the teaching, through its research, development and consultancy efforts; its close links with the industry and professions in its areas of expertise; its ability to initiate and innovate in all academic fields.

Academic Structure

The university is divided into four faculties:

— Engineering
— Built Environment
— Business School
— Science, Technology, Health and Society.

There are 18,000 students on the rolls of the university. Out of this, 80.1% are at undergraduate level. The largest enrolment i.e. 29% is in Business and Management, followed by Engineering and Technology (22%); Built Environment (12%); Social Services (9%); Mathematical Sciences and Computing (7%); Education (6%); Science (5%); and Humanities (3%).

There are distinct differences between the Ex-polytechnic South Bank and the majority of the old universities. There are the vocational and wide access missions of the polytechnics, the relative predominance of part-time, certificate and diploma courses, a large, mature student population, particularly on part-time courses. The level of formal educational qualification on entry tends to be lower, and more local students, again partly due to the part-time courses.

As regards institution-industry linkages, it was observed that the need of the employers for well-qualified, well-educated and adaptable employees in the shape of new graduates is, and will continue, to be a major priority for the university. Success in this area reaps other benefits such as investment by employers in sponsored research, development, consultancy and short courses.

Funding Arrangements

The university attracts income from a variety of sources. The relative proportions of income provided by these sources reflect the diversity of this institution's mission and the market it serves. The source of funding in the case of South Bank University include:

1. *Tution fees :* It was explained that fees for the great majority of full-time home students are paid from public funds. This payment is made by local education authorities.
2. *Funding Council Grants :* The grants from funding Councils fall into four main categories:
   - — funding for teaching
   - — funding for research
   - — non-formula funding
   - — capital funding

Funding for teaching and research and some non-formula funding, though allocated under these headings, are all available as a block grant. In other words, the university can distribute the funds internally at its own discretion.

Non-formula funding is provided to cover the additional costs of operating in London, to support specialist museums, galleries, libraries etc. Capital funding is for acquisition or creation of assets which have a life of more than 12 months.

3. *Research Council Grants* : South Bank University receives grants for research from Research Councils such as Engineering and Physical Sciences Research Council; Biotechnology and Biological Sciences Research Council; Medical Research Council etc. It also obtains contracts from industrial and commercial firms and government departments such as Department of Health.

South Bank University has several other additional sources of income, including:

— income from endowments and from foundations
— donations
— sponsorship of posts (including, in particular, professorial Chairs- often in areas of immediate interest to the sponsoring company)
— interest earned on cash balances and investments
— teaching contracts for specific customers (nursing, other professions allied to medicine, initial teacher training etc.)
— income from short courses.

Quality Assessment and Assurance

The University has an internal quality assessment unit of its own. It constantly addresses itself to various aspects of research, teaching and learning. It reviews students' achievements, the curriculum, the application of learning resources (library, equipment, laboratory etc.), student support and guidance, and academic management at the subject level. The assessment also includes direct observation of a wide range of teaching and learning activities, and discussions with staff and students.

Quality assessment is also carried out by HEFCE on the basis of a "core set of six aspects of provision". They are:

(i) Curriculum design, content and organization.
(ii) Teaching, learning and assessment.
(iii) Student progression and achievement.
(iv) Student support and guidance.
(v) Learning resources.
(vi) Quality assurance and enhancement.

All the above aspects are graded on four point assessment scale, numerical grading, 1-4, in ascending order of merit.

South Bank University has a strong reputation in the field, particularly for applied research. It is unique in the programmes of courses that it offers, in the way it teaches and prepares students for their working lives and in the make-up of the staff and student body itself. The University offers the Postgraduate certificate in Higher Education, the first year of which is mandatory for new academic staff appointees without a teaching qualification or with less than two years experience in higher education.

The staff appraisal system is also in position. It provides an opportunity for open discussion on performance, future objectives and staff development needs.

The University offers degree courses of applied nature such as occupational Health and Hygiene, Technology Management, Computer Aided Engineering, Engineering, Product Design, Mass Communication, Nursing and Midwifery etc.

Summing up, the University's future Plans are efficiency, effective management, open access, scholarship, innovation and vocational relevance, quality and quality control. Embracing them will ensure a future which will be stimulating and rewarding for students and staff alike.

1.3 Cambridge University

Background

Cambridge University has been famous for centuries, adapting and changing in order to attract the best students and to maintain the highest standards of teaching and research. The university provides opportunities for high level academic achievements. When the university was assessed in December, 1992 (by HEQC), it was rated very high in almost all the subject areas, indicating that the research work was of international levels. Such a ranking puts the university at the top of research league in British universities.

Students

The University has a student strength of more than - 16000-11000 undergraduate and 5000 graduates. About 10 per cent of the students are from overseas. Almost all students are required to study a complete Cambridge degree course lasting two, three or more years-during which period they stay in Cambridge.

Staff

Most of the academic staff of the university are either fellows or members of the colleges. There are about 7000 members of the staff, and the colleges each employ additional staff.

Cost of Study

The students of UK studying in Cambridge are eligible for grants towards their tuition fees, paid by their local government authority. Overseas students pay their full tuition fees, as also their living expenses.

The University's annual expenditure is approximately 220 million pounds - 50% of which are received from the Government and the remaining 50% by resource mobilisation which is done through projects, donations, etc. Most of the money, unless earmarked, goes into the general 'kitty'. For this, the university has a Development Director who is helped by 10 full time members who are solely devoting their time for fund raising through alumni campaigns, major potential donors, national lotteries etc.

Cambridge has had a long time in which to accumulate resources for study and is attracting donations and endowments that provide a wealth of help to the modern student. Besides the equipment facilities (for laboratory) to Science and Maths courses, the university has Computer services to help all students planning dissertation or other written work. Colleges in Cambridge have such facilities. The students have access to the college library in the department and the main university library.

Planning

The university has a long term plan strategy to foster and develop academic excellence across a wide range of subjects and all levels of study, to enhance its position as one of the world's leading universities, and to continue to play the wider intellectual and cultural role which has characterised its activities over the years. Most of the planning is done at the faculty and department levels. The aims of the university are kept in view while planning, and are:

(a) to attract outstanding students from all backgrounds.

(b) to provide education of the highest quality at both undergraduate and postgraduate level.

(c) to produce graduates of the calibre sought by industry, the professions, the public service and the academic world;

(d) to encourage and pursue research of the highest quality across the range of subjects studied in the university, and to develop new areas of research and teaching in response to the advance of knowledge and scholarship;

(e) to respond to the needs of the community; and

(f) to participate actively at national and international level in matters of policy, affecting higher education.

The collegiate nature of the university is fundamental to the university's history and organisational structure and partnership between the university and the colleges, which are independent foundations, continues to be central to Cambridge development.

The major subjects taught in the university fall under six broad areas viz. Arts & Humanities, Social Sciences, Biological Sciences, Clinical Medicine, Physical Sciences & technology.

The university has been sanctioned a number of research projects, in operation with the university industry, generating an income of 6.2 million pounds. A total of 80 million pounds is generated as research grants through projects. Generally on projects, 40% is charged for overheads of which 2/3rd goes to the university and 1/3rd to the Department.

Since the assistance from HEFCE is limited, the university has identified an overall shortfall in the capital funding needed to achieve the objectives set for the ten year period. High priority is given to raising external funds and to funding minor work projects.

The university's financial strategy has been to achieve annual surpluses between 0.5 & 1.0 per cent of general expenditure.

Academic Quality & Audit

The university and the colleges aim to provide teaching of the highest quality across the full range of subjects available. The General Board has overall responsibility for the quality of university's academic activities through their principal standing committees concerned with quality assurance and assessment, the Education Committee. This Committee (Education) has extended its role into areas related to quality control and quality enhancement, more actively monitoring teaching & assessment activity, promoting teaching effectiveness & encouraging good practice in teaching and assessment. It is involved in departmental reviews which look at teaching, research, resources, its development, its organization and management. This review must have one outside expert whose report goes to the Vice-Chancellor and then to the Education Committee. The committee has three components: autonomous bodies of examiners responsible for Undergraduate standards, Degree Committees and the Board of Graduate Studies responsible for the entry standards or Postgraduate and for the standard of research degrees in the light of examiner's reports and autonomous appointments committees and Board of Selection Committee responsible for the standard of recruitment to Lecturers & Professors. All external examiners send their reports to the Vice-Chancellor and these are subjected to close scrutiny. The university teaching programmes are kept under review by the Faculty boards concerned and by the General Board. Individual subjects are revised at least once in ten years.

The CVCP Academic Audit Unit visited Cambridge university to undertake an academic audit of the university. They don't look at quality *per Se*, but at structures and processes within the university to maintain quality. The unit has experts from amongst university Professors (other than Cambridge) and Industry representatives and considered the following:-

(a) to review the university's mechanism for monitoring and promoting the academic standards which are necessary for achieving the objectives;

(b) comment on the extent to which procedures in place in individual university reflect best practice in maintaining quality and are applied in practice;

(c) identify and commend to universities good practices in regard to the maintenance of academic standards at national level;

(d) to keep under review nationally the role of examination systems.

This review reflects the role of the university which has over 1200 teaching staff, 11,000 undergraduates, 4,680 graduates and research scholars doing Ph.Ds. It also takes note of the 31 colleges operated within the federal structure of the university but remain independent self-governing bodies.

The report also reflects the Quality Assurance in Teaching, Learning & Monitoring Students' progress.

The HEFCE is involved in Quality Assessment of University Departments, and has conducted the same for 10 departments of Cambridge University, so far. All these have been graded excellent on a three point scale, but there is no incentive for 'excellent' assessment. The self assessment report by the Department concerned is an important document, and HEFCE has prescribed rigorous guidelines for a brief and precise document, rather than a large, rambling one.

Cambridge University has not substantially departed from the national pay scales, though it does have some freedom in this regard. The Lecturer's scale is from 15,000 pounds to 28,000 pounds per annum, but there is no senior Lecturer's grade. The top of the scale for Readers is 32,000 pounds and that for Professor 38,000 pounds. The teachers accountability is an important aspect and it is the Head of the Department who looks into his work to ensure this. The Head of the Department gets an extra 4,000 pounds per annum for his work as Head of the Department.

1.4 Department of Education, U.K.

1. British Government and its Department of Education are not directly involved in management of higher education. Government gives due importance to university autonomy. The role of the government is to give policy directions to the funding council and provide funds to the higher education institutions through funding community.

2. Considering the expansion of higher education and increasing expenditure on higher education, the University Grants Committee, which was the department of British Government was abandoned and a statutory body of Higher Education Funding Council for England (HEFCE) was set up in 1992 with a view that the money spent on higher education is accounted for and quality of Higher Education maintained.
3. HEFCE funds 80 universities and 50 colleges. The Department of Education is now Department of Education and Employment. The present policy of the British government is to provide higher education to 30% of their population in the age group 18 to 25. This is called their participating rate, which for the time being they have capped. It has raised sharply in the last 10 years being 13% in 1983, 17% in 1988 and 30% in 1993.
4. The Department of Education carries out the labour market forecast. The emphasis of the government is to provide training to the school learners and teachers for taking up employment. There are Directorates of School Education, Higher Education and Training and Adult Education.
5. The Department of Education, on the advice of the HEFCE, and CVCP demands makes allocation to Funding councils, on the basis of available funds.
6. Government gives the policy directives to HEFCE on the number of students to be admitted in each course, and new seats to be created in different courses. However, the university can start new courses considering demand for such courses from students it can fund their courses. It is the policy of the government to encourage courses in areas of Science, Engineering and Vocation based. The Vocational courses are influenced by professional bodies.
7. While allocating funds to the Funding Council, main criteria is student enrolment, rate of inflation and 'efficiency gain' i.e. reduction in expenditure. Presently enrolment rate of 30% is taken into account, as also an 'efficiency gain' by 3% in the coming year 1996-97. They have already indicated a requirement of another 3% in 1997-98 and 2% in 1998-99 as 'efficiency gain'.
8. Universities are receiving about 80% funding from public funds and 20% from private funding. The universities are encouraged to go for private funding for capital expenditure. In the coming year's budget, there is a reduction in capital expenditure. Institutions are expected to get this from outside.
9. British Government spends 1% of G.D.P. on Higher Education and 4.3% on Education. In the budget, 14 billion pounds is for higher education, while for total education it is 30 billion pounds.
10. British Government, through local bodies, pays full tuition fees for the British students. However, maintenance grants to students are provided on the basis of income of the parents. British Government is thinking of introducing loan system to students. A bill in this regard is under consideration of the Parliament.
11. In order to maintain quality of higher education, which is a duty of the government, HEFCE has a Quality Assurance Committee. The Quality Assurance Committee scrutinises performance of universities and courses through outside assessors. New universities are accepting this idea. This quality assessment is being done subjectwise throughout the country. They

have done 15 out of 69 subjects so far and hope to complete all 69 subjects by 2000 AD.

12. Funding council gives five point grading to course area and if found unsatisfactory, one year's time is given for improvement and if it has still not improved, then it is closed down.

13. Universities have been asked to set up Quality Assurance Councils and Academic audit units and to improve external examination system for undergraduate, as well as, post graduate courses.

14. British government appoints Head of HEFCE. Permanent Secretary is a member of HEFCE.

15. Pay scales of university and college teachers are decided nationally in consultation with Teachers Union, CVCP and HEFCE. The pay scales of teachers and civil servants at the lower and top levels are

Lecture 10,000 pounds p.a.	*Lower grade 10,000 pounds with three level.*
Professor 40,000 pounds p.a.	
Permanent Secretary	Top position 1,20,000 pounds p.a.
Division Manager	1,00,000 pounds p.a.

16. Government servants are assessed every year on the basis of annual assessment and there are five gradings. Those who are in upper two are given pay increment. Those at the lower two do not get and sometimes they are removed from the service.

17. The budget is presented to the Parliament in November. On the same day of budget presentation, the Department of Education writes to HEFCE spelling out the policy and approach in certain important areas. These are:

1. *Student numbers*
2. *Government Policy*
3. *Tuition fees*
4. *Efficiency gains*
5. *Private finance*
6. *Pay*
7. *College fees*
8. *Pension for part time staff*
9. *Review of method for funding teaching*
10. *Priority areas*
11. *Research*
12. *Length of courses*
13. *Access funds*

1.5 Committee of Vice-Chancellors and Principals (CVCP)

1. CVCP is a body of the Executive Heads of all UK universities. Its aim is to improve U.K. universities funding, promote public understanding and assist in developing good practices. It works towards formulating common views on matters affecting universities, representing universities in dealing with Government, Parliament, funding councils and other national institutions and organisations. The CVCP is supported through subscription by its member institutions. Full members are executive heads of UK institutions which have legal powers to award their own first and higher degrees and - by virtue of Act of Parliament, charter, statute or order of the Privy council, have the right to claim university status. Institutions are represented by their Vice-Chancellor or Principal.

2. In accordance with its aims and objectives CVCP speaks for universities collectively, provides services of advice and information centrally, which universities find difficult and costly to provide individually.
3. It provides guidance and codes of practice on a wide range of topics affecting the operation of universities. It collects information on the state of universities, their staff and their students, for use in dealing with funding councils, government and Parliament. CVCP acts as a centre of information on the technical aspects of higher education management of all universities.
4. CVCP publishes studies on many aspects of higher education, with a view to stimulating debate and decision-making. It also publishes occasional papers by its members and bi-monthly newsletter, CVCP News.
5. It provides a digest of higher education matters as they figure in Parliament and the Press, and runs a Press and Public relation office for monitoring the media and Parliament, promoting and lobbying on behalf of U.K. universities.
6. The CVCP has;
   (i) Central Purchasing Co-ordinater offices at Edinburgh and Sheffield to improve the efficiency of HEI's purchasing.
   (ii) Overseas Research students awards scheme;
   (iii) The CVCP has assigned a number of functions to 7 specialist agencies.
      1. *The universities and colleges staff development agency (CVCP).*
      2. *The universities and colleges employers association (CVCP, SCOP, CUC).*
      3. *The universities and colleges admissions services (CVCP, SCOP).*
      4. *The Higher Education Statistics Agency (CVCP, SCOP).*
      5. *The Higher Education Quality Council (CVCP, SCOP, CSCFC).*
      6. *The Higher Education Careers Services Unit (CVCP, SCOP, CSCFC).*
      7. *Higher Education Business Enterprises Ltd.*

1.6 Higher Education Funding Council for England (HEFCE)

The HEFCE was established in 1992 under the terms of the Further and Higher Education (FHE) Act. 1992. The HEFCE is a non-departmental public body operating within a policy and funding context set up by the U.K. Government.

The Council assumed responsibility for funding higher education in England on 1.4.1993 succeeding the universities Funding Council and the Polytechnics and Colleges Funding Council.

The mission of the HEFCE is to promote high quality, cost effective, teaching and research within the higher education sector, having regard to national needs.

The Council's main functions are to advise the Secretary of State for Education on the funding needs of higher education institutions in England and to distribute available funds.

The HEFCE also encourages institutions to meet the demands from students cost effectively, while promoting and assessing quality in education and research; it also encourages diversity in the provision of higher education, a widening of access and greater opportunities, develop active partnership with institutions, such as the polytechnics, which were providing good education and awarding degrees. By doing so, the expansion took place in research as well. Currently, 30% of the eligible student population join the university system which is encouraging, as against 8-10% currently in India.

The Council funds education and research to a total of 147 institutions of higher education - 72 universities, 27 individual institutions of university of London and 48 colleges of higher education. It also funds prescribed courses of higher education at 73 further education colleges, who receive their main public funding from the Further Education Funding Counsel.

The HEFCE is the largest single source of funding for higher education in England. Funds are provided in exchange for teaching and research and are conditional on their delivery.

Institutions are accountable to the Council, and ultimately to Parliament, for the use of these funds. They (Universities and Colleges) are independent bodies and are free to raise money from other sources.

Tuition fees are the other major source of public funding. Funds for tuition fees are provided by the Department of Education and Welsh office to local education authorities (LEA) in England and Wales. The LEAs make payments to universities and colleges for qualifying students from the U.K. and other European Community countries. In Scotland and Northern Ireland, the Scottish office and Department of Education, Northern Ireland make tuition fee payments directly to institutions.

Research Councils support research projects in individual institutions and also provide support for some postgraduates. Medical and dental education and research depends on a partnership between the Council and the National Health Service (NHS) and HEFCE funds for teaching and research in Universities and medical schools, while NHS funds support the clinical facilities needed to carry out these activities.

The HEFCE allocates funds to each university or college to support teaching, research and related activities. These funds are provided in the form of a block grant. Institutions are free to distribute this grant internally at their own discretion, as long as funds are used for purpose for which they were provided.

The Council maintains a broadly consistent division of funding between teaching and research from year to year. The exact split is decided annually.

In distributing funds for teaching and research, the Council aims to :

(a) *maintain diversity and increase opportunities,*

(b) *encourage efficiency in the use of public funding,*
(c) *maintain and enhance quality; and*
(d) *provide stability in funding from year to year.*

The funds are distributed by formula, which takes account of the size and activities of individual institutions and the quality of their research. Because the formula driven funding methods are made public, the funding outcomes each year can be checked using information published by the Council. During 1995-96 an amount of 3207 million pounds was distributed for teaching and research - 2270 million pounds for teaching, and 636 million pounds for research and 301 million pounds for other related activities.

The number of students to be admitted to different courses is fixed by the HEFCE and according to this grants are provided. If the number is less, grants will be reduced and if the number exceeds then also grants are reduced as a penalty. This penalty is a multiple of the numbers of students in excess of that prescribed and the fee per student.

While allocating research funds, the quality of research is assessed on a five point scale (1 to 5). Those institutions which secure 1 or 2 do not get the money; 3 and above secure funds.

Section 70 of the Further and Higher education Act of 1992 directs the Higher Education Funding Council for England to assess the quality of education provided in institutions. In carrying out this responsibility, the HEFCE carries out the programme of assessment by its Quality Assessment Division. This is a unique feature of HEFCE. While carrying out quality assessment, each institution is asked to submit a self assessment of its provision in the subject which contains a clear statement of the subject aims and objectives and an evaluation of provision. This will be used whether or not an assessment team visits the department. Assessment visits are carried out by a team of 4 to 5 subject specialist assessors from other universities led by a reporting assessor (who is generally not an expert). The assessors also undergo a basic training for a week which helps them in arriving at the judgement quickly. Such an exercise will be undertaken in 69 subjects by 2001 AD and so far the work has been completed in 15 subjects. Sometimes an expert from industry is also taken. Grades are from 1 to 4. Grades are given against each of six parameters (given later). If all 6 grades are greater than 1 the department is approved. If even one grade is 1, then, re-visit is made within 12 months.

Individual department reports go to the university, newspapers, Parliament, Government and on Internet. The consolidated report, which is prepared for each subject once the exercise for that subject is over for all institutions, goes to all schools in the country, all career services, all public libraries, all major newspapers and Internet.

Upto 1994-95 there were three overall assessment categories, excellent, satisfactory and unsatisfactory. The subject judged unsatisfactory is to be revisited. If it continues, there will be no grants provided and the university will be asked to close down the subject.

In April 1994, an independent report commissioned from the Centre for Higher Education Studies in the Institute of Education, University of London, confirmed that quality assessment was regarded in higher education institutions as a justifiable undertaking which was producing good results. A number of suggestions for improvement were made.

Two key areas of change were introduced. First, all academic departments in the subject being assessed are now visited; second, there is a core set of six aspects of provision around which self assessment, visits, judgments and reports are structured. These six aspects of provision are :

(a) *curriculum design;*

(b) *content and organization;*

(c) *teaching, learning and assessment;*

(d) *student progression and achievements;*

(e) *student support and guidance; learning resources and quality assurance and enhancement as provided by university to department.*

Each of these is evaluated on a 4 point scale to create a graded profile. An overall threshold judgement is derived from the profile - either as approved or subject to reassessment within a year.

The principles of the assessment method remain broadly the same. These are :

(i) *assessment against the department's aims and objectives;*

(ii) *assessment of the students learning experience and students achievements;*

(iii) *assessment by peer review;*

(iv) *combination of internal and external process - a self assessment prepared by the subject provider and an assessment visit by external assessors.*

The revised method of assessment is being followed from April 1995.

The Council has agreed to establish a fund for the development of teaching and learning, an initiative which will stimulate developments in teaching and learning and disseminate good practices across the sector. This is being developed by the Quality Assessment Committee.

In each of the subjects assessed so far, the HEFCE has brought out a subject overview report on all the aspects and this report is an excellent document indicating the status of the subject on different aspects. The assessment outcome in different universities and colleges is published. Such a method, perhaps, needs to be adopted by the NAAC of UGC.

The HEFCE has brought out Assessors' Handbook indicating the core aspect of provision, the structure of self assessment, the analysis of self assessment, the assessment visit and report. The assessment visit lasts generally for three days from Monday afternoon to Thursday afternoon.

For quality research, currently an amount of 636 million pounds is spent by HEFCE out of its announced grant of 3 billion pounds per annum. The research work done by universities is reviewed by HEFCE once in 4 years. The Panels reviewing research work, do not go to the universities but receive upto 4 printed research documents per research faculty. Then they grade on a 5 point scale for calculating the universities research grant. Grades 1, 2, 3, 4, 5 get a mark of 0, 1, 2, 3, 4 respectively. Then, to calculate amount of research grant to the institution, a formula is used:

grant = mark × volume
(number of faculty in research)

Thus, grade 1 gets no research grant.

Research Councils separately support individual projects while HEFCE supports infrastructure to the universities/colleges for carrying out research. Research Council's support is roughly 380 million pounds annually.

The teaching funding formula is based on historical costs per student and comprises two components - core (2201 million pounds) and margin (60 million pounds).

1.7 University of Bath

The objective of the University has been to advance learning and knowledge by teaching and research, particularly in science and technology, in close association with industry and commerce. Three important factors of the university are quality, balance and diversity.

Bath is one of the smaller universities in Britain having a student strength of 5000. There is a sense of participation across the campus. There are 1600 students at the college of Higher Education. This university was founded in 1966. The university has been able to respond to the changing demands laid on education by Commerce and Industry. The university places strong emphasis on education for 'real world' - an emphasis reflected in the consistently high demands for its graduates.

For internal Quality Assurance (Q.A.) the university has a standing committee of university senate which does the quality assurance. There is a unit for Q.A. in the personnel office. An important feature has been that external experts are invited once in every 5 years to look at the department and advise the university on various aspects relating to quality maintenance. The departments are free to introduce innovations in consultation with the experts.

The university has secured a high 4 points in most oi the departments on 5 point scale.

Since public funding is inadequate, resources are generated by :

(a) *overseas students; (no restriction on numbers)*

(b) *part time students;*

(c) *research councils and contracts;*

(d) *consultancy from industry;*

(e) *European community funding and*

(f) *housing, catering etc.*

There is a development officer responsible for resource mobilisation. There are 6 full time persons in the development office. This office is headed by a pro-Vice-Chancellor with the Heads of each School.

The university has an *internal staff training unit for both the academic and non academic staff. There are two staff Training officers for in-house training.*

1.8 University of London

The University of London was established in 1836 by a Royal Charter. It remained solely an examining and degree conferring authority until 1900, when it was re-constituted and on a federal and collegiate basis.

The objectives of the University of London are to pursue excellence in teaching, research and scholarship; to offer, through its federal structure of colleges, Institutes and other facilities, an unsurpassed range of opportunities for education, and training to all those able to benefit; to enhance public welfare, prosperity and culture by encouraging applications of learning and research, and to secure and administer resources to achieve these aims effectively.

The University of London is a federation of over 50 colleges, institutions and associated institutions. There are 67,000 students in the University, out of which 63% are at U.G. level; 21.4% at PG level, and 14.8% at research level. It also makes a number of its degrees available to external students world-wide. There are currently some 22,000 external students from 100 countries registered for degrees in 11 main subject areas. Of these only 22 are from India.

Quality Assessment

Under the terms of the 1992 Further and Higher Education Act, the Higher Education Funding Council for England (HEFCE) has the responsibility for maintaining and assessment of the quality of education that it funds. In pursuance of this obligation, the Quality Assessment Division of the HEFCE constitutes Assessment Terms which normally have at least 3 subject specialist assessors. Nominations from industry, commerce and professional bodies are also made. Assessors are trained by the Council in conjunction with the CVCP, Universities and College Staff Development Agency before embarking them on their first assessment visit. The purpose of the assessment visit is to gather, consider and verify the evidence of the quality of education in the subject, in the light of the subject provider's aims and objectives in that subject. The assessment is based on the evidence in the self-assessment and its analysis. Assessors' judgments are delivered in the form of a graded profile and an over-all summative judgement at the threshold level. Initially, the assessment exercise caused some irritation amongst the teaching staff of the concerned subject areas but the rationale and philosophy of the programme has now been accepted by all. The programme ensures clear commitment to good teaching, staff development that promotes good teaching and learning, forging of effective linkages with industry, commerce, and professional subject bodies that contribute positively to curriculum development, good teaching practice, and the development of general transferable skills. It also ensures building up of constructive relations and effective communication between staff and students.

Resources, Funding and Financial Affairs

The university receives grants from HEFCE to support its teaching, research and related activities. These grants are provided in the form of a block grant and institutions are free to distribute this grant internally at their on discretion, as long as these are used for the purposes for which they were provided. Tuition fees are the major source of grants received by the University. Funds for tuition fees are provided by the Dept. of Education to local education authorities who, in turn, make payments to Universities and Colleges for qualifying students from U.K. The

Research Councils support research projects in the University and also provide support for some postgraduates.

Additional Resources

Some of the multi-faculty colleges with an outstanding reputation, founded on the quality of their research mobilise upto 50% of their required resources through grants from Research Councils; Charities like 'Cancer Research', public Corporations, and Endowments like Rockfeller; Industry, Health Authorities, European Community, Overseas students etc. Some specialised institutes like United Medical and Dental Schools collect upto 70% of their income from other U.K. Universities, Health and Hospital Authorities, Industry and Commerce, Public Corporations, Charitable Bodies, European Community and Overseas sources.

External Programme

The programme was established in 1858. More than 22,000 students are currently studying in a range of subjects at first degree, diploma and Master's levels, as well as for the M.Phil and Ph.D. Most external students are aged between 25 and 35 and the minimum age for entry is 17. The University of London degree awarded to external students is of the same standard as that awarded to internal students. The minimum period, of study is 3 years. It is quite possible for full time students to get their degree within this time but most students take four to five years to complete their course. The maximum period of registration is 8 years.

In order to maintain high standards, academic staff at the University and colleges and Institutes are directly involved in the development of syllabii, the preparation of study materials, setting of examination papers and the evaluation of scripts. Overseas examinations are usually organised through the local Ministry of Education or the British Council.

Undergraduate students pay a handling fee for their initial application, registration fees annually and examination fees as appropriate. The cost of a typical Bachelor's degree programme at present is approximately 2000 pounds for students outside the European Union.

2.0 NOTES ON INSTITUTIONS OF HIGHER EDUCATION IN CANADA

2.1 Ontario Institute for Studies in Education (OISE)

The Institute was established in 1965 and offers graduate programmes leading to Master's degree, Ph.D. and EDD through its departments. Most of the courses are offered on campus, some are offered through field centres or by distance education mode. The admissions are subject to the regulations of the University's School of Graduate Studies; and the students receive degrees from the University of Toronto. In 1996, OISE will be integrated with the faculty of Education of the University of Toronto to form a new faculty within the University. It is also a major centre of educational research and development in Canada. The Institute has an enrolment of 1500 PG and 900 Ph.D. students at various stages in the programme. There are some international students. Nearly 70% of the students are women. OISE graduates hold faculty and administrative position in universities and other organisations across Canada and throughout the world.

Some of the distinct features indicated are :

1. The School teachers are evaluated once in 3 years. However, initially appointed teachers are evaluated once every year for 2-3 years.
2. Government provides funds to the University which is quite autonomous in character.
3. There are approximately 22-23 community colleges in Ontario State which are extremely successful. These Community colleges offer a wide range of courses like Electrician, Nurse, Airline Pilot, Hair styling etc. Such colleges have a board of governors from different walks of life. They give Associate degree. The Board of Governors comprises industrialist, community leaders etc.
4. The principals, university Administrators, and School Administrators undergo training.
5. The salaries of the teacher and Professor are, perhaps, highest in the world.
6. The Principals of Secondary schools receive a salary of 65-85,000 Canadian dollars p.a. where as the university professors get upto 1,04,000 Canadian dollars p.a.
7. The age of retirement of University teachers is 65 years.
8. The Government (Provincial/Federal) regulates the fees structure also.
9. The number of students to be admitted in a programme is not restricted unlike UK; only in medical school the number is fixed because of high cost involved.
10. Undergraduate education gets more priority than Post graduate.
11. The funding of the Government is linked with the programmes conducted by the University.
12. There are centres of excellence in Agriculture, Mining etc. which receive special grants.
13. Canada is following a mixed system of British and American in the field of higher education.
14. The Federal Government has promoted vocational programmes to solve the problem of unemployment. Still, there are 9-10% unemployed graduates in Canada.
15. Provincial Government only provides grants, and regulates tuition fees, otherwise universities are self regulating.
16. OISE gets mainly two types of grant from government.
    - (a) per pupil grant
    - (b) research money (not a major part)
17. Tuition fee today is around 2500 Canadian dollars p.a.

The pay scales of teachers are :

(a) Assistant Professor - 51,000-63,000 Canadian dollars p.a.
(b) Associate Professor - 61,000-89,000 Canadian dollars p.a.
(c) Professor - 74,000-1,05,000 Canadian dollars p.a.

These scales are highest in Canadian Universities.

2.2 Higher Education Group

There are two publicly funded higher education sectors in Ontario: the university sector and the community college sector. All the 17 universities have the legal authority to grant degree. All the universities operate some combination of professional and academic, graduate and undergraduate degree programmes. The period of formal study to obtain a degree varies by programme and in some instances, by institution. The requirements of an undergraduate programme involve 3-4 years of study, Master's degree 1-2 years and a doctoral degree two or more years.

The **Community College** sector is composed of 23 Colleges of Applied Arts & Technology (CAATS). While English is the primary language of instructions in most community colleges, several are bilingual (French & English). In 1979, the Ontario Council in University Affairs identified five basic goals for Ontario Universities.

— *to develop a more educated population;*

— *to educate and train people for the profession;*

— *to provide for study at the highest intellectual level;*

— *to conduct basic and applied research, including development and evaluation;*

— *to provide service to the community;*

These goals have been approved by the provisional government and it continues to be used as a means fo describing the role of the university sector in Ontario.

Ininifially in 1965, the **Ontario Community Colleges** were given the responsibility to :

— *provide courses of types and levels beyond, or not suited to, the secondary school setting;*

— *meet the needs of graduates from any secondary school programme apart from those wishing to attend university.*

— *meet the educational needs of adults and out of school youth, whether or not they were secondary school graduates.*

Four more areas were assigned in 1967

— *they must embrace total education, vocational and non-vocational, regardless of formal entrance qualifications, with provision for vertical and horizontal mobility;*

— *they must develop curricula that meet the cultural aspirations and occupational needs of the student;*

— *they must operate in closest possible cooperation with business and industry, and with social and other agencies, including education, to ensure that curricula are at all times abreast, if not in advance, of the changing requirements of a technological society;*

— *they must dedicate to progress, through constant research, not only in curricula but also in pedagogical technique and administration.*

They (Vocational Colleges) provide basic skill development programmes.

Control over education programmes

Canada is a federation of 10 provinces and two territories. Though education is a provincial responsibility, there is little doubt that the federal government has played an extremely important role in the historical development of higher education throughout the country.

The provincial government provides both operating and capital support. The influence of Canadian Government in terms of higher education policy has been gradually decreasing since the introduction of the Established Programmes of Financing arrangements in 1977. The Federal Government supports university research, manpower training, variety of programmes which are directly or indirectly accessed by institutions of higher education. The provinces play the key role in terms of higher education legislation and regulation.

The university determines the curriculum of each programme, what courses will be offered in a specific year and who will be admitted to these programmes. New Courses are developed in academic departments and formally approved by the institution's senior academic body, the Senate.

The Ontario Council on Graduate Studies (OCGS) composed of university representatives, conducts a review of all relevant new programmes including input from external appraisers. Existing programmes are appraised periodically by the Ontario Council.

Research

University professors are free to determine their own research agendas. Most universities have a central research support. The research depends upon the availability of research funding.

Institutional funding

Universities receive core funding from the provincial government in the form of operating grants. Each year the Ontario Council on University Affairs, provides the government with advice on the total sum that should be made available to the sector.

Operating grants are allocated on the basis of a formula which is based on several factors.

Formula allocated for operating grants are designed to support the general expenses of universities and they are not earmarked in terms of any specific expenditure.

Tuition fee levels for formula funded post-secondary programmes are set by provincial regulation. The government funding pattern assumes certain income from fees. If the institution fixes a fee greater than that, government deducts that sum from the grant. In effect, there is a corridor with a lower and higher limit, the lower limit being obligatory. Most institutions have reached the upper limit. Thus, tuition fees is influenced by government policy and grant. Colleges are free to engage in fund raising activities.

Formula grants account for nearly 70% of total universities operating revenues mostly based on student enrolment. Other grants (research) account for 9% of university operating revenues. Fees for credit courses represent 21% of operating reserves. There is no new university established during last 20 years.

Generally there is no cut in the secondary school grants - on the other hand, it has increased.

International students pay five times the fees paid by local students. Each university in answerable to its own board of governors; provincial governments intervene hardly at all in the operation of universities and there is little, if any, provincial direction on the planning and development of university system. There is only one private university which raises its own funds from the students fees.

The Ontario higher education system represents an example of a relatively healthy, publicly funded post secondary system with a high level of institutional autonomy, little direct government intervention and limited competition.

2.3 Ministry of Education and Training

In February 1993, the Ministry of Education, College and Universities and Skill Development as well as the Jobs Ontario Training Programme, were combined to form the Ministry of Education & Training (MET).

The Ministry of Education & Training provides policy and guidelines for learning programmes in Ontario. The Ministry approves programmes offered by colleges of applied arts and technology, and is responsible for their overall governance. The Ministry also provides funding to Ontario University and gives them degree granting authority.

The Ministry is responsible for imparting education from kinder-garten right upto research level. The report of the Task Force as to how the university should meet its responsibility for institutional accountability. Approval of policies and procedures governing institutional performance, and the procedures governing institutional performance, and the monitoring of time - are the two main aspects. Each institution should have as objective statement and accompanying academic and financial plans sufficiently specific to permit assessment of progress toward fulfilment of its missions.

Among the major areas of university accountability are academic affairs and the financial issues.

The essential formula of funding is that money is distributed according to activities/programmes. Once the Government allocated money, it is first allocated to Post Secondary Education. Then it is divided among colleges and universities as per the formula. As indicated earlier, universities obtain their funding grants through various sources, such as federal, provincial and municipal governments as well as non-governmental grants and contracts, sales amd service, private donations, investment income and student fees.

The Ontario Government annually allocates a global amount to the Ministry of Education and Training (MET) for operating support to universities, usually prior to the beginning of each fiscal year. Factors considered in determining the universities' allocation include enrolment pressures and government priorities, balanced against the competing demands for funding from other public sectors and projected government revenues.

The funding level for each university is set at a fixed share of system revenue each year.

There are four major funding sources :

1. *Basic grants*
2. *Transition grants*
3. *Mission related / Institution specific grant and*
4. *Research overheads / infrastructure.*

During 1996-97 there will be reduction at $ 280 million. Universities will be getting $ 1.5 billion dollars and the Colleges $ 689 million - a reduction of $ 120 million.

The total reduction in provincial funding for post secondary education will be 400 million dollars equivalent to 7% of total expenditure by colleges and universities. This will be made good by increasing tuition fees by 15%.

2.4 Council of Ontario Universities (COU)

The process for the appraisal of graduate programmes in Ontario is unique because it focuses on graduate studies and involves 15 autonomous universities. The Council of Ontario University (COU) is a voluntary organization created to promote co-operation among the universities. The appraisal process is administered by Ontario Council of Graduate Studies (OCGS) - an affiliate of COU on which each university has one representative.

There are two appraisal procedures. One is directed towards the evaluation of the quality of new programme proposals and is referred to as standard appraisal. The other is periodic appraisal and is involved in the evaluation of the quality of existing programmes with each programme in the province being reviewed once during a seven year period. The standard appraisal process has been in existence in one form or another since 1967 and the periodic appraisal process since 1982.

The Council is funded by universities. Appraisal is a voluntary process but all Vice-Chancellors have not to offer programme which are not approved. For the universities it is compulsory for themselves.

The performance appraisal includes a self-study at the institutional level; which is thereafter sent to the Council. The document should indicate the objectives, resources, students, success of the programme, employment opportunities, research output etc. The appraised report is to be advanced, focused and scholarly.

The appraisal process is involved with the quality assessment graduate programmes - thus the process itself has to involve individuals who have been actively involved with graduate studies as well as experts in the area. The evaluation by peers, is, therefore, critically important to the evaluation of graduate programmes in the appraisal process. For new programmes, if the Appraisal Committee is *prima facie* convinced, two consultants are appointed for graduate studies and three for Ph.D. programmes. They go individually, give report to the Appraisal Committee, which recommends to the Council (OCGS). For existing programmes, consultants may or may not go.

Appraisals as a historically derived process

The current appraisal processes have been shaped by a number of factors. First and most important, was the expansion of universities in the Province during the 50s and 60s in response to projected demographic trends. The university was visualised as a place of teaching, research and professional development. A second factor shaping appraisals is the development of graduate studies in the province. Prior to 1960, graduate studies were not well developed and many Canadians went to universities in the USA or UK for graduate work, particularly at the doctoral level. Ontario did not fully participate in the international flow of graduate students. The third feature shaping the appraisal process has been the establishment of formula funding for the allocation of funds by the provincial government, to universities. The formula was based on weighted student enrolment.

Within five years of the implementation of this enrolment driven formula, the provincial government froze the total amount for allocation to the universities and had to evolve a new mechanism to take into account the rapid increase in graduate enrolment.

The new process was evolved in 1982 by COU in order to satisfy the need for accountability with respect to graduate programme.

The appraisal procedure reflects the demands by Government for accountability, clear decision by the community of university concerning what they can, and cannot do as collectively and accumulated experiences concerning how a common evaluation procedure can be applied to all sizes of programmes, across all disciplines. The reports produce reliable and credible judgments of the academic quality of existing and proposed graduate programmes in Ontario.

In 1989, the Ontario Council on University affairs (OCUA) stated that the funding criteria for new graduate programmes would be that each must :

(a) *pass a rigorous appraisal;*
(b) *meet social needs and have been identifiable student demand;*
(c) *be consistent with the aims and objectives of the institution and*
(d) *be an appropriate development within the Ontario University system.*

The Appraisal Committee consists of 21 members, 3 Sections (seven per section) each one serving a three year non-renewable term. The members are a representative cross section of the more senior faculty in the universities and each person must have a record of active involvement in graduate studies and research.

Outcome of Appraisals

A programme can be placed in one of two final categories - *"good quality"* or *"not approved"*. The "not approved" indicates that the university must cease admitting students to the programme.

There are also two temporary categories - *'good quality with report'* and *'conditionally approved'*. The programme under the first category indicates that the programme is good at the time of approval but it is expected that problems may develop due to retirement of senior scholars or new development - such programmes are approved to continue with a report called for after a specific period of time. Programmes which require distinct improvement to be acceptable are placed in the conditionally approved category.

Procedures for periodic appraisal

Rules and procedures governing both Ontario Council of Graduate Studies (OCGS) and university are established in a co-operative manner.

The key features relating to the review of graduate programmes in Ontario are:

1. The process has been evolved to serve the needs of the university community in Ontario;
2. It has been developed in the context of university/provincial government discussions over the financing and development of graduate studies and research;
3. It is governed by a set of bye laws and procedures that have to be approved formally by the Council of Ontario Universities and transmitted to Senate or Governing Council of each university;
4. It is financed by the university and managed by the Deans through OCGS at its secretariat;
5. Most important is that the major goals are the assurance of quality; improvements in graduate programme, public accountability as to the standard of graduate work; preservation of autonomy, promotion of good practice in programme of management and consistent with quality.

These features are to be achieved collectively, and operate within a frame work of co-operative federalism.

2.5 Office for Partnership for Advanced Skills (OPAS)

1. OPAS is recognised as a major contribution to the continued development of advanced competitiveness and intellectual capacity in the Ontario and Canadian work force in the key sectors of new economy,
2. It is a new service operated though a partnership of industries and universities.
3. It offers access to the assets of all 17 universities in Ontario.
4. It can identify the right advanced training whether at one university or several, for manpower development.
5. OPAS assists in meeting most training needs. A growing number of jobs require people who have advanced skills in business, communication, technology and other areas. This type of training is not readily available elsewhere. The package of training has to undergo a change when it becomes obsolete.
6. The training programmes are developed in consultation with each business or industry to ensure that they are directly relevant. Programmes are arranged in modules. Industrial workers come in for study of three days to a week, at a time.
7. It also locates opportunities for post graduate internship.
8. An expert from Industry can come into the university as Adjunct Professor, and vice versa University Professor can move over to industry for work there.

Thus, it may be seen that the OPAS is a joint initiative that offers business and industry a single point of entry to all the universities in Ontario and access to their faculties' expertise.

2.6 Concordia University, Montreal

The Concordia University has 25000 students, of which 11,000 are part time. The University is known for its innovative features. It offers over 40 graduate programmes. There are four faculties viz Arts and Science, Commerce and Administration, Engineering and Computer Science and Fine Arts. The university is famous for its internationally reputed faculty and student population. Most active in Canada, through Shastri Indo Canadian Institute, the university has collaborative research.

One special feature of the university is that it has a distinct programme - "Coop courses". While community colleges in Canada do not offer degrees, the University in collaboration with industry runs the Coop programmes at the under graduate level. They have employment potential; The programme is for 10 terms - six of which are offered on the campus and four at work place like Industries, Banks etc. The students get easily absorbed in various employment sectors. The number of students offering the courses is selective and limited to 10-15. The World Bank also provides assistance for this activity.

The employers interview the candidates at the end of the course and offer jobs to them. The students would have acquired high level skills, communication abilities and can synthesise and analyse the information.

There is an Institute of Coop. Education in Concordia. There is a body called CREPUQ - Conference of Rectors and Principals in Quebec. While Concordia and other Universities have their own assessing mechanism, CREPUQ also have a Quebec wide system of assessing proposals for new graduate programmes.

About 80% of the operating grants are provided to the University by the provincial Government of Quebec; 15%-17% are raised by way of tuition fees from he students and about 3% are generated by Business Schools and ancillary enterprises.

Total budget of the University is $ 190 million. Out of this, $ 130 million is provided by the government and $ 30 million is the contribution of tuition fees. The remaining are raised by the business units of the University as well as by way of sponsored/contractual research. It was indicated that the largest amount of funding is provided by the provincial Government as per the enrolment based formula funding on a block grant basis. In addition, a small portion of the total funding available is reserved by the government through Research Councils such as Social Sciences and Humanities Research Council, Medical Research Council etc.

2.7 McGill University, Montreal

At McGill University there is a rigorous system of appraisal of teachers. Teachers appointed against tenure posts are initially temporary for six years. After about 3 years, a detailed review of their work is done and only then they can continue for the next three years, though still on a temporary basis. At the end of 6 years, their entire performance is again assessed and only if their teaching and research is found outstanding, do they get a tenure appointment. There is no question of further review after 6 years. While in the University as a whole, about 20% of teachers, initially selected against tenure posts do not ultimately get tenure appointments, and therefore, leave the university, in the Faculty of Management, those not found suitable may be around 40%. A very important input into this assessment process of teachers is the students evaluation of their teaching. At the end of each course a teacher has to distribute an evaluation format (with about 20 questions) which students have to fill and return. These are fed into the computer and the results are not only given to the teacher, but kept in the Library for perusal by others too.

While the fee for local students is $1800, that for foreign students is $10,000.

An innovative programme recently started by the Faculty of Management is a combination of the Medicine Course (MD) and the MBA. They do not have an MBBS degree. After graduation, students desiring to take up medicine join the 4 years' MD course. The new course will be for 5 years and will give the doctors an MD and MBA degree.

2.8 Carleton University, Ottawa

The University offers undergraduate programmes in a wide variety of disciplines in arts, social sciences, engineering and science, and a range of graduate programmes including extensive joint programmes in science and engineering with the University of Ottawa.

Admission to first year is based on the Ontario Secondary School Diploma or equivalent with six Ontario Academic Courses included with minimum 60% average for a pass degree and 65% for an honours degree, including appropriate subject pre-requisites. Minimum requirements only establish eligibility, and limited enrolment programmes normally require averages over 70%.

The University has, on its rolls, 19,268 undergraduate students (14,721 full-time and 4,547 part-time); 2,491 at graduate level (1,664 full-time and 827 part-time). Thus there are 21,759 students (16,385 full-time and 5,374 part-time) at undergraduate and graduate level.

The operating budget of the University is $ 184 million. Sponsored/assisted research budget is $ 24.5 million. The tuition fees for full-time undergraduate students in the faculties of Arts and Science is $ 2577 whereas for Business, Engineering, Architecture and Industrial design the fee ranges from $ 2592 to $ 2833.

Funding

Education is a provincial, and not federal responsibility. The Ontario Government annually allocates funds to the Ministry of Education and Training (MET) for providing support to Universities, usually prior to the beginning of each financial year. Factors considered in determining the University allocation include enrolment and government priorities. An enrolment-based formula has been employed to provide an objective method for determining grant allocations to individual universities. Its aim is to ensure a reasonable degree of equity in the distribution of available government support. Funds are also specifically earmarked to support specific institutions, activities or programmes in order to meet the priorities of government or identified needs within the University sector.

Broadly, grants are determined by taking into account the total number of students enrolled in various disciplines and levels of study. Grants for a particular institution are calculated by multiplying the number of students by a weighting factor for the programme in which each student is enrolled. The weighting factor ranges from 1 for general arts and science to 6 for doctoral work. The weighting system is a rough measure of how costs vary by programme and level. About 70% - 80% grants are provided by provincial government on the basis of the enrolment-based funding formula. About 15% to 20% are mobilised by way of tuition fees from the students. Fee rates are regulated by the government. Different rates apply to different undergraduate and graduate programmes. Overseas students are charged higher fees, about 4 to 5 times more than the domestic students. Of institutions which charge differential fees, or full cost recovery fees, half are required to remit all of the differential to the provincial Government, which in turn is distributed amongst all the Universities. Of those institutions in Alberta and British Columbia which are permitted to retain all or part of the differential, many devote at least part of the extra revenue to scholarships, bursaries, and special services of international students. Since Carleton Univeristy is not allowed to retain the differential, there is no fiscal advantage for it to enroll overseas students in larger number. However, majority of the institutions in Ontario want to retain full or part of the differential revenue raised by them by way of higher fees from international students.

Resources to the extent of 5% are raised by Carleton University through donations, endowment grants, funded research and contractual research. $ 35 million were mobilised by the University during 1994-95 by forging partnership linkages with reputed firms in the industrial/commercial sector of the private sector in Canada.

In order to encourage interaction between the University, local business, industry and government the Carleton University has established the **Carleton University Development Corporation** (CUDC) as a private company wholly owned by the University. The following are the principal activities of CUDC, which may involve Co-sponsorship with the private and public sector:

- *Technology transfer* : It manages the development and Commercialisation of technologies and related intellectual property.
- *Training and professional development* : Training opportunities for professional development are available in business, and management development, workplace skills development, productivity and quality management.
- *Systems development* : It manages the marketing of commercially attractive systems developed at Carleton University.
- *Development of university - owned lands* : CUDC is assisting Carleton University in developing a plan for its new campus, including the creation of a research park.

Another innovative method of resource generation is the establishment of the **Canadian Higher Education Group (CHEG)** which is a permanent alliance of a major private sector consulting and service firm and five leading universities experienced in education and human resource development around the world. Its members are: Hickling Corporation; Carleton University, McMaster University; University of Guelph, Waterloo and Western Ontario. The private sector brings to the alliance management skills for efficient and effective implementation of international projects and links the education sector with its clients in business and government. The Universities provide diverse educational and training resources of the highest international standards.

Brief profile of the members of CHEG

Hickling Corporation offers international services in education, HRD, institutional development, and capacity building to the public and private sectors with offices in Canada, U.S.A., and a permanent presence in Asia and Africa. Carleton University focuses on arts, social sciences, engineering, science and public administration..... University of Guelph is renowned for its agricultural and veterinary programmes..... McMaster University has world class health sciences, water management and business programme...... University of Waterloo is famous for its engineering, environmental studies, mathematics and computer science programmes...... University of Western Ontario includes programmes in education; physical and applied sciences; law and its schools of medicine and business are recognised internationally.

In brief, CHEG provides services in the following areas:

- *human resource planning*
- *instructional development*
- *curriculum development*
- *course selection*
- *teacher education*
- *research management*
- *educational policy, management and administration*
- *organisational development*
- *computer information systems*
- *evaluation and monitoring*
- *management of change.*

Besides CUDC and CHEG, the University has also set up *Development Office* which is headed by a Director and has 5 to 10 other members who are professional fund raisers. 4 members of the staff have been recruited on full-time basis and the rest are on a contract. The basic function of the Development Office is to secure outside contracts for research in the University. In addition, the University also has a full-time Commercial Development Officer who is responsible for maintaining closer liaison with the private sector with a view to getting funds for research activities in the University.

To sum up, about 70-80% operating grants are provided to the Carleton University by the provincial government on the basis of the enrolment-based funding formula; 15%-20% funds are raised by the University through tuition fees, about 5% are secured through donations, tie-ups with the public and private sector etc. During the current financial year 1995-96, the operating grants budget of the Universities in Ontario has been cut down by $ 400 million. In other words, the operating grants of each University have been reduced by about 16% as compared to previous years. The Universities have been told to reduce deficits and raise resources on their own so as to reduce dependence on Govt. resources in a significant way.

2.9 Association of Universities and Colleges of Canada

1. Association of Universities and Colleges of Canada (AUCC) having 88 members including President, Rectors of Universities and Colleges, excluding community colleges, at the national level.

2. AUCC advances the interest of University community. It provides a forum through which new and emerging issues are identified and debated. It offers

services to members to meet their goals. It fosters international academic co-operation and international exchange programmes. It develops linkages among Canadian universities with each other and with their strategic partners.

3. AUCC advocates enhanced Federal support for university research and urges the Federal Government to adequately fund the granting Councils in order to allow them to nurture and develop a broad base of research expertise and excellence.

4. In Canada, universities and colleges are receiving financial assistance as follows:

   (i) Operating grants from provincial government based on mainly students enrolment, and students tuition fees. For last 5-10 years grants are decreasing and fees are increasing. Fees, as a percent of general operating funding varies from province to province from 18% in Quebec to 35% in Nova Scotia. In last few years increase in fees is permitted every year by the Government.

   (ii) While deciding the grants allocation, number of graduates produced per year is also taken into account and grants are allocated $ 1200 per graduate and $ 1300 for each master.

   (iii) Universities are also receiving special purpose funds from Provincial Government.

   (iv) Research funding provided on the basis of national level competition.

   (v) Universities are receiving special training grants from Federal Government for conducting training programmes for those who are unemployed for the last five years.

   (vi) Universities are also entitled to receive up to 2% of their budget based on performance but many a times the information to be supplied for such grants cost much more than 2%.

   (vii) Every University is incurring deficit. The deficit amount is managed by banking loans or giving premises on lease etc. All universities assured to recoup deficit within next 3 years. However some of the older universities like McGill are having large amount of endowment.

5. Assessment and Accreditation of Programmes are carried out for professional students by the professional bodies like Nursing, Medicine, Engineering etc. Professional bodies are responsible for maintaining a standard of the profession.

6. Accreditation of programmes are done programme-wise on voluntary basis. AUCC has developed indicators for self evaluation. In AUCC, there is a Board of evaluation and there are evaluation bodies for each discipline.

7. AUCC conducts Management courses for educational Administrators at University and college levels.

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Documentation

National Assessment and Accreditation Council Activity Report (November 1994 - October 1995)

CONTENTS

		Page
1.0	Introduction	144
2.0	Role and Responsibilities of NAAC	144
3.0	Academic Activities	144
3.1	Promotional Activities of NAAC	144
3.1.1	Awareness of NAAC	144
3.1.2	One Day Seminars	144
3.1.3	Reaching Vice-Chancellors	145
3.1.4	Seminars for Principals of Autonomous Colleges	145
3.1.5	Seminars for other Sectors	145
3.2	Strategy Planning	145
3.2.1	Brain Storming Session	145
3.3	Information Data Base on Higher Education (IDBHE)	146
3.4	Invitation for "Letter of Intention"	146
3.5	Internal Quality Assurance Cell (IQAC))	147
3.6	Publications	148
3.7	International Links	148
3.7.1	Linkage with USA	148
3.7.2	Visit of the Indian Team	149
3.7.3	Linkage with U.K.	149
3.7.4	Linkage with UNQAAHE	149
3.7.5	Linkage with Commonwealth of Learning (COL)	150
3.8	Future Academic Activities	150
4.0	Organisational Activities	150

1.0 Introduction

The National Assessment and Accreditation Council (NAAC) was established by the University Grants Commission (UGC), under section 12CCC of the UGC Act of 1956, September 16, 1994 and is heaquartered at Bangalore. The NAAC is an autonomous organisation and was registered as a society under the Karnataka Societies Registration Act, 1960 and the Karnataka Societies Rules of 1961. The initiative for setting up the Council came from the recommendations and directive of National Policy on Education (NPE), 1986 and the Programme of Action (POA), 1986 revised in 1992.

The NAAC started functioning w.e.f. November 01, 1994 with the assumption of charge by Prof. Arun S. Nigavekar as the founder Director of NAAC.

Through the courtesy of the then Hon'ble Chief Minister of Karnataka, Sri Veerappa Moily, NAAC moved into its present accommodation by December 01, 1994. By the end of April, 1995 the 2nd floor of the building became fully operational.

2.0 Role and Responsibilities of NAAC

NAAC's responsibilities are to ascertain that the parameters suggested for assessment and accreditation are objective and to the extent possible qualified and publicised widely.

NAAC shall

— arrange for the assessment and accreditation of institutions of higher education or units thereof or specific academic programmes or projects,

— help and encourage the institutions in developing their own procedures, techniques and modalities for self evaluation and,

— ensure an optimised use of resources and achievements of the identified goals of institutions of higher learning. It also has the responsibility to initiate research studies in planning and evaluation of educational institutions.

3.0 Academic Activities

3.1 Promotional Activities of NAAC

3.1.1 Awareness of NAAC

To bring awareness of the assessment and accreditation process individual letters were addressed to the Vice-Chancellors, Directors of the Institutions and Principals of the Colleges recognised by the University Grants Commission. Personal letters were sent by the Director, NAAC to the faculty requesting them to join the crusade for quality education as their participation is vital for the success of the process.

3.1.2 One Day Seminars

To bring awareness to the faculty, supporting staff and students, of the assessment and accreditation process and to obtain their valuable suggestions and allay their apprehension, a number of promotional activities were organised. To the extent possible, NAAC is trying to cover all the regions. One day seminars were organised at the Universities of Anna, Hyderabad, Karnatak, Lucknow, Mysore, Pondicherry, Pune, Roorkee, and SNDT Women's University for the faculty.

3.1.3 Reaching Vice-Chancellors

NAAC has reached out to the Vice-Chancellors at various seminars and conferences organised by UGC and Association of Indian Universities (AIU) starting with the VC's conference at Pune (1994); National Institute of Educational Planning and Administration (NIEPA); at a seminar organised by Centre for Professional Development in Higher Education (CPDHE) of the University of Delhi; and at the recent Vice-Chancellors conference at Manipal (1995).

In addition NAAC maintains continuous contact with the Vice-Chancellors through letters and. information publications.

3.1.4 Seminars for Principals of Autonomous Colleges

An important sector of higher education scenario which is the result of NPE and POA are the autonomous colleges. NAAC has made special efforts to organise seminars for this sector. One day seminars were held at Stella Marris College (autonomous), Madras; University College for Women, Hyderabad and at LBS Academy of Administration, Bhopal.

3.1.5 Seminars for Other Sectors

In an attempt to reach all the components involved in the higher education system one day seminars were also organised at Ferguson College, Pune; RYK Science College, Nashik; BMCL, Pune; Geography Subject Panel at UGC, New Delhi; Physics Subject Panel at IUCAA, Pune; Neelamangala, Karnataka; and DOE, Hyderabad.

3.2 Strategy Planning

3.2.1 Brain-Storming Session

To formulate guidelines for effective functioning and strategic planning NAAC had conducted a Brain-Storming session at Bangalore. Notable participants were late Prof. G. Ram Reddy, the then Chairperson, NAAC; Prof. Armaity Desai, Chairperson, UGC; Shri Inderjeet Khanna, IAS., Secretary, UGC; Shri Anand Saroop, IAS, former Education Secretary and presently Honorary Editor, UGC; Prof. Amrik Singh, former Secretary General, AIU; Prof. K. B. Powar, Secretary-General, AIUl; Prof. V. G. Bhide, former V.C., Poona University; Prof. V. C. Kulandai Swamy, former V.C., IGNOU; Prof. S. D. Karnik, former V.C., University of Bombay; Prof. N. R. Shetty, V. C., Bangalore University; Prof. Rame Gowda, V.C., Karnatak Unviversity; Prof. M.I. Savadatti, former V.C., Mangalore University; Prof. Malla Reddy, former V.C., Osmania University; Prof. N. K. Chowdhary, V.C., Gauhati University; Prof. Anjana Desai, former Prof. & Head of the English Department, South Gujarat University; Mr. T. S. Kuppuswamy, CAS, USIS, Madras; and Sh. Gunasekharan, Head, Southern Regional Office, UGC, Hyderabad. A number of issues were deliberated and recommendations made at this Session have been of immense help to NAAC.

Most notable among them are:

— Role of NAAC, its credibility of transparency in its functioning,

— Functional relationship between UGC and NAAC,

— Evolution parameters for assessment of universities, and research Institutions,

— Process and analysis of self-study and on-site visit reports,

— Preparation of a data base of experts,

— Accreditation fee to be treated as approved expenditure so as not to burden the universities and institutions, and

— Publicity of NAAC's activities.

3.3 Information Database on Higher Education (IDBHE)

One of the major recommendations of the Brain-storming session is to create a data base of experts which will be of immense help for various activities of NAAC. As per the latest UGC statistics there are 2,86,000 teachers conducting programmes for over 5 million students in the higher education sector.

NAAC has done the following

— Communication was sent to all Vice-Chancellors, and Directors of Institutions of higher education and research, and principals of colleges recognised by UGC informing them of the setting up of the NAAC and requesting them to send the list of faculty and recently retired faculty.

— A brochure highlighting the higher education scenario in India and the aims and objectives of NAAC was circulated to all Vice-Chancellors and Registrars.

— Out of 214 Universities and institutes of national importance, 145 have responded to the communication of NAAC and have sent the list of faculty.

— A brochure along with the proforma for Curriculum Vitae data has been sent to 24000 faculty.

— Faculty from 120 Universities have responded till today.

— 2500 Senior faculty have shown their interest in the process. Percentage-wise it may not be impressive but the quality of the faculty who have responded so far is of a very high standard.

— Brochures and Curriculum Vite Proforma have been sent to 4628 Principals of colleges recognised by the UGC.

— A data base of specialists from CSIR Laboratories is being prepared. This, in addition to experts from other national laboratories, universities and other higher education institutions, will be very valuable for programme assessments.

— NAAC has received a list of 581 recently retired senior faculty from the universities and communications are being sent to them requesting for their participation in the crusade of quality education.

3.4 Invitation for "Letter of Intention"

Letters were addressed by the Director, NAAC to the Vice-Chancellors of Universities and Directors of Institutions informing them of the activities of NAAC and its endeavour to create better academic environment and accreditation, which as of now is voluntary. They were requested to send "letter of intention" for assessment and accreditation so as to enable NAAC to take appropriate steps.

In response to the Director's communication, the following institutions have sent the letter of intention for assessment and accreditation:

- Annamalai University, Madras
- Cochin University of Science and Technology, Cochin
- Dr. B. R. Ambedkar Open University, Hyderabad
- Indira Gandhi National Open University, New Delhi
- Kashi Vidyapeeth, Varanasi
- University of Kerala, Tiruvananthapuram
- Kuvempu University, Shimoga
- Makhanlal Chaturvedi National University Institute of Journalism, Bhopal
- Mysore University, Mysore
- Pondicherry University, Pondicherry
- University of Pune, Pune
- Rohilkhand University, Bareilly
- Central Institute of English & Foreign Languages, Hyderabad
- Central Institute of Higher Tibetan Studies, Varanasi
- Deccan College, Pune
- Indian Institute of Science, Bangalore
- Tata Institute of Social Sciences, Bombay and
- Dept. of Physics, Bhavnagar University, Bhavnagar.

3.5 Internal Quality Assurance Cell (IQAC)

Self evaluation is the back bone of the assessment process. The process of assessing is a continuous phenomenon. Prof. Armaity Desai, Chairperson, UGC has addressed the Vice-Chancellors and Directors of the Institutions requesting them to establish internal mechanisms for creating quality consciousness among the faculty and supporting staff. Self-introspection and self-assessment is a major responsibility of the concerned institution, she reiterated. She had requested them to establish an "Internal Quality Assurance Cell" in consultation with NAAC.

In response to the communication from the Chairperson, UGC the following Universities, Institutions and Departments have expressed their intention of establishing the IQACs.

- University of Allahabad, Allahabad
- Anna University, Madras
- Arunachal University, Itanagar
- Awadhesh Pratap Singh University, Rewa
- Bangalore University, Bangalore
- Bharathidasan University, Tirchirappalli

- Bhavnagar University, Bhavnagar
- University of Burdwan, Burdwan
- University of Calcutta, Calcutta
- Ch. Charan Singh University, Meerut
- Gauhati University, Guwahati
- Dr. H.S. Gour Vishwavidyalaya, Sagar
- Jai Narain Vyas University, Jodhpur
- University of Kerala, Thiruvananthapuram
- Kota Open University, Kota
- Kumaun University, Nainital
- Kuvempu University, Shimoga
- Lucknow University, Lucknow
- Maharshi Dayanand Saraswati University, Ajmer
- Mahatma Gandhi Kashi Vidyapith, Varanasi
- Mohan Lal Sukhadia University, Udaipur
- Mysore University, Mysore
- Nagpur University, Nagpur
- University of North Bengal, Darjeeling
- Patna University, Patna
- Pondicherry University, Pondicherry
- University of Pune, Pune
- Sambalpur University, Sambalpur
- Sardar Patel University, Vallabh Vidhyanagar
- Shivaji University, Kolhapur
- Sri Krishnadevaraya University, Anantapur
- Sri Padmavati Mahila Vishvavidyalayam, Tirupati
- Tamil University, Tanjavur, and
- Dept. of Mathamatices, Maharshi Dayanand University, Rohtak.

3.6 Publications

NAAC has brought out following two publications.

- Quality Education through Self-study and External Evaluation.
- Some Questions and Answers on Assessment and Accreditation.

3.7 International Links

3.7.1 Linkage with USA

National Assessment and Accreditation Council has analysed the assessment and accreditation process in USA; quality assessment, quality assurance, quality audit and performance indicators used in academic audit in UK. It is also now familiar with the methods of assessment in other countries notably Australia, Hong Kong, New Zealand, Japan, Canada, etc. Direct linkage with accrediting agencies in USA was initially established at the Vice-Chancellors Conference at Pune (1994) with Dr. Dorothy Fenwick, Executive Director, Commission on Recognition of Post-secondary Education (CORPA), USA addressing the conference on Assessment and Accreditation methods. Continuing this linkage NAAC supported its Consultant, Dr. Krishnamoorthy, who was on a private visit to USA, to study the Assessment and Accreditation processes in detail (March - April, 1995). With the help of Dr. Dorothy Fenwick (who had drawn the programme). Dr. Krishnamoorthy attended the Centenary Conference of North Central Association of Schools and Colleges, Commission on Institutes of Higher Education of Chicago in March, 1995 and was honorary member of on-site visit team on a programme accreditation at Loyola University, Maywood, Chicago and on an institutional accreditation at Northern Main Technical College at Presque Isle, Maine which comes under the New England Association of Schools and Colleges (NEASC). His visit included discussions with NEASC and South Central Association of Schools and Colleges at Tyler and Dallas in Texas.

3.7.2 Visit of the Indian Team

On an invitation form USIS, Prof. A. Gnanam, Chairperson, NAAC; Prof. Naresh C. Mathur, Vice-Chairperson, UGC; Prof. Arun S. Nigavekar, Director, NAAC; and Dr. Latha Pillai, Deputy Secretary, UGC on deputation with NAAC have visited USA during September-October, 1995.

The team attended the Middle States Association of Schools and Colleges Workshop for team leaders and evaluators at Philadelphia and had discussions with CORPA; CORPA and National Policy Board; Department of Education and the National Council on Accreditation of Teacher Education; American Association of Schools of Law, National Association of Schools of Public Affairs and Administration; Board for Engineering and Technology and Association of Distance Education, *(Professors Gnanam and Mathur).*

Prof. Arun S. Nigavekar and Dr. Latha Pillai participated in the Commission meeting of New England Association of Schools and Colleges at Bedford, Massachussets, and commission meeting of Council on Occupational Education, at Charleston. They also had discussions with Dr. Steve Weiner, Western Association of Schools and Colleges, San Francisco and Prof. Shelden Rothblatt, University of California at Berkeley.

Prof. Arun S. Nigavekar and Dr. Latha Pillai were honorary members of On-site visit team, on an Institutional Accreditation at Truckee Medows Community College, North-Western Association of Schools and Colleges, Reno, Nevada.

3.7.3 Linkage with U.K.

With active help from British Council, New Delhi, a firm contact has been established with HEQC and HEFCE in U.K. NAAC has acquired quality audit reports of a number of universities in U.K. including those of Oxford and Cambridge. One of the main events has been the visit of Dr. Paul Clark, Director, Quality Assessment Council, HEFCE to NAAC on November 14, 1995 and his interaction with the Director, NAAC and other members of staff. British Council has proposed exchange visits between NAAC and quality assurance agencies in UK to have an on the spot study of the processes.

NAAC has also established contact with Prof. (Ms.) M. V. Burslan, Deputy Vice-Chancellor, Manchester Metropolitan University.

3.7.4 Linkage with INQAAHE

NAAC is one of the founder members of the International Network for Quality Assurance Agencies to Higher Education (INQAAHE) which links quality assurance and accreditation and will conduct research in higher education quality management.

3.7.5 Linkage with Commonwealth of Learning (COL), Canada

NAAC is also conducting Workshop on Effective Learning and Teaching in Higher Education for the Commonwealth of Learning, Vancouver, Canada.

3.8 Future Academic Activities

- A meeting of the Vice-Chancellors' and Directors' of Institutions who have sent in their letters of intention of assessment and accreditation is fixed for 15th December, 1995 at NAAC's office in Bangalore.
- Meeting of the Vice-Chancellors' and Directors' of Institutions who have expressed their intention to establish IQAC is scheduled for 3rd of January, 1996 at NAAC's office at Bangalore.
- A workshop is scheduled during 3rd week of January, 1996 with collaboration of AIU for the co-ordinators of self-study of various institutions who opted for assessment and accreditation by NAAC. The main theme of this workshop will be on "Performance Indices in Higher Education".
- Continuing with the promotional activities of NAAC, one day seminars will be organised at the following Universities (during December 1995, January, February, and March 1996); Kurukshetra, Guru Nanak Dev, Himachal Pradesh, Kumaun, BITS (Pilani), Punjabi, Allahabad, Gauhati, NEHU, Tripura, Utkal, Burdwan, Andhra, Calicut, Goa, MS University, Baroda; Sardar Patel University, Vallabh Vidyanagar; Dr. Hari Singh Gour Vishwa Vidyalaya, Sagar; Jammu, Jiwaji, Rajasthan Vidyapeeth and Bombay.

4.0 Organisational Activities

For any new organization at a new place adjusting to the environment and assembling and structuring the office brings in a lot of complications and needs a lot of involvement. NAAC is no exception to this. However, due to the support of the local authorities, it has in a short time organised its office which is modern and user friendly and an efficient place to work with:

- Integrated approach for telephone, information and data transfer, fax and e-mail facilities,
- Local Area Network (LAN) with access to each of the staff,
- DTP with a small number of brochure production facility,
- Reprographic facilities, and
- Software for finance and administration

NAAC has entered into collaboration with CDAC for:

- development of software for numerical and textual format, data storage retrieval and analysis,
- development of form processing software by optical memory reading (OMR) facility, and
- hardware for Local Area Network.

NAAC is building up the Library and has acquired a large number of self-study documents from USA and UK, publications of accrediting agencies in USA and books on assessment and accreditation. The Encyclopaedia on Higher Education (4 Vols.) and the International Encyclopaedia of Education (12 Vols.) have been added recently.

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Editorial

Given the implacable resource crunch and the general criticism that collosal resources are being wasted in turning out unemployable graduates, it is natural that all the public systems promoting higher education should assign the highest priority to the introduction of courses to enhance the employability of graduates. In this context, the Eighth Plan programme of the UGC for the vocationalization of undergraduate education is a major initiative.

It is fortunate that this programme is under constant scrutiny. Predictably, this has brought out that while some of the courses have met with a good response, many others have had very few takers. Keeping in view the fate of all the earlier programmes to introduce vocational education into the curriculum of general education, the UGC is moving cautiously with regard to the expansion of the new programme. Institutions and students are being allowed to decide whether they wish to take up vocational courses. What is more, measures are afoot not only to allow the states and universities to modify the ongoing programmes but even to evolve some courses suited to their needs and capabilities.

This unusual but welcome approach, to an extent, reflects an openness and also a sense of humility in the face of an intractable problem. It is also indicative of the way unyielding resource constraints are forcing everyone to look before they leap. After all, the UGC cannot go on bearing the cost of the infrastructure and the operation of a nation-wide programme from plan to plan. The crunch has already materialised. It is doubtful that the Ministry of Human Resource Development, the Planning Commission or the Ministry of Finance will accomodate the states by permitting UGC to continue bearing the cost of the *ongoing* vocational courses in the Ninth Plan also. On the other hand the states, which too have serious resource constraints, will not assume the responsibility of shouldering the commitments arising from the Eighth Plan unless they are doubly sure that the pattern of vocationalization introduced through UGC's initiative and funds is a credible solution of the problem of educated unemployment. So far as we know, till now, only Maharashtra has accepted that they will assume the responsibility of meeting the Eighth Plan commitments of vocationalization.

We have discussed the programme of vocationalization with several knowledgeable people. They complain that no literature giving details of its progress is available to anyone. Therefore, they can comment either on first principle or on the basis of whatever they have learnt from press reports or their contacts in colleges. They feel that considering the stake of the youth, the parents, the colleges and indeed the whole country, it is essential that this programme should be operated in an environment of absolute transparency. After all, it is being run with the taxpayers' money; thus it is in the public domain. People have a right to know what is going on and ask questions about it. Therefore, it is expected that all problems and constraints and successes and failures should be documented and half yearly, if not quarterly, progress reports giving all the available data should be published for widespread dissemination. Unless this is done, manpower planners, experts in the development of curricula and syllabi and researchers in the processes of education will be unable either to investigate and understand or to suggest improvement in the approach and the operation of this key programme of national importance.

In the context of the publication of data, there is a lot of interest in discovering whether disaggregated data in respect of institutions located in different size categories of settlements is available. People want to know whether any co-relations can be established between the choice of courses, the quality of operational arrangements and the viability of courses on the one hand and the locational characteristics of participating institutions, on the other. It is generally believed that the colleges in smaller cities and moffusil towns have neither the clientele nor the ability to organise many of the vocational courses on the pattern laid down by the UGC. Those familiar with the working and performance of the once high profile programme for the vocationalization of higher secondary education feel, rather strongly, that the fate of vocational programmes is sealed most often in the anxiety to get them implemented in spite an acute paucity of resources. Many people hold the view that no effective vocational programme can be run without well trained, professionally competent and full time instructors, appropriate infra-structure, sufficient inputs and flexible funding. There can be no greater fallacy than assuming that vocational courses can be run cheaply or casually.

Now that vocationalization of undergraduate education is entering the third year, it is time to plan for following up the placement and the career paths of the participants who will soon be entering the world of work. At a time when programmes are being developed and implemented for the tracking of fish and birds, surely identifying countrywide, and following up a sample of a few hundred young men and women who took up different courses and studied in colleges located in different size - categories of settlements should not be an insuperable problem. Afterall, vocational courses were started only to solve the problem of the unemployability of graduates. We will have reason to conclude that we adopted the right strategy only if they get reasonably good jobs in the area of their training within a reasonable time. If they don't, and specially those from smaller cities and mofussil areas don't, we will conclude that we went wrong somewhere. Then, we will have to undertake a massive exercise in the collection and critical analysis of facts and evolve, perhaps, a new set of location - specific courses as well as new parameters for their implementation.

Another issue which often comes up for discussion relates to the inter-university and inter-state mobility of students graduating with different vocational courses from various institutions. This is closely related with comparability of courses and of the processes of examination or evaluation. This, when we think of backward linkages, is determined, inter alia, by the structuring of courses, the determination of syllabi, the provision or identification of reading materials, the competence and commitment of delivery mechanisms and the procedures and quality of quarterly or semesterly and annual evaluation. Since vocational courses have been started on the initiative and the funds of the UGC, these matters cannot be left entirely to individual universities and colleges. The UGC has, at least at this initial stage, to see (as it is going to do in the case of NET examinations to be conducted by states) what is happening in respect of these inputs and ensure a minimum and comparable level of inputs. And finally, it has to be ensured by every state, university and college that the kind of employers or enterpreneurs who might employ the participants in each of the vocational courses are associated, closely and continuously, with instruction, training and evaluation.

In the context of vocationalisation, it is highly desirable that we should examine, assess and internalise the strange and explosive phenomena occurring in the market place. It seems that 'unrecognised' and privately organized networks catering for a bewildering variety of competencies are spreading like wildfire all over the country. Of course, these are not of a uniformly satisfactory quality. However, what they offer and what they deliver cannot be dismissed out of hand since, in spite of the hefty fees they charge, they are meeting unprecedented response from lakhs of students. Therefore, we need to look at these courses to find out what the commercial networks are offering and why these are so popular. We need to consider this phenomenon of boom very carefully to see whether some of the features characterising these courses can be incorporated into the 'public' or 'recognized' systems of undergraduate education.

It seems that these privately run courses are so popular mainly because they promise, essentially on the strength of the credibility of the course offered, specific and concrete benefits to the participants in terms of handsomely paid jobs and entry into the new white collar elite engaged in different functions connected with 'modernization, liberalization and globalization'. The sustained popularity of these courses with students is evidence enough that their organizers must be delivering what they promise, to a substantial extent, to a large proportion of participants. Can we find out the processes behind the success of the delivery mechanisms of private entrepreneurs so that we too might offer the same kind of assurance to the participants in the vocational courses offered by the 'recognised university system'?

There was a time when it was assumed that the official systems, and those running these, had a monopoly of wisdom. Alas, the pluralism inherent in democracy and free enterprise has knocked the bottom out of this certitude. Now governments and government recognised systems have to compete with free wheeling private entrepreneurs who have no rigidities and, therefore, can mould themselves to whatever the market needs, as quickly as necessary. Perhaps, the 'recognized' systems should review their methods of obtaining feedback, learning from their own and their competitors' experiences and keeping ahead of the changing patterns of demand and competition. If these lessons remain unlearnt, quite possibly, the urban youth from well off families will garner all the lucrative jobs via the educational entrepreneurs while their poorer and less favourably located country cousins will vegetate and eventually join the underclass engaged in poorly paid vocations.

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Lately, people have begun to ask how the programmes for poverty alleviation, health care, family planning and education are evolved. This is not only because of the feeling that these programmes are yeilding less than the desired results but also because these programmes, being immune to the forces of competition, tend to continue indefinitely, irrespective of performance. On the other hand, those programme which are subject to the competitive forces of the market place are much more liable to closure if their performance goes below acceptable levels.

New programmes get initiated largely because of the feeling that what is going on at a particular point of time falls short of requirements. This could be either because some problems are assuming disturbing proportions or some potentials are not being exploited or because the environment or the resource situation or the patterns of demand have undergone significant changes. Whatever the reasons, it is seen that new programmes, particularly in respect of welfare and social services are formulated:

(i) either through a systematic exercise to reshape an ongoing programme yeilding sub-optimal results; or

(ii) by the adoption (and adaptation) of programmes which were successful elsewhere or at another time, for the achievement of the desired objectives; or

(iii) on the basis of the intuitive perceptions of knowledgeable people; or

(iv) (and this happens quite often) by the fiat of those in authority.

Obviously programme planning by fiat is absurd. We can dismiss alternative (i) also not because it is unwise to study and restructure a poorly performing programme but because most people prefer to get a new mount rather than going through a painful process of diagnosis (which, inter alia, might disturb many vested interests and create many enemies) and medicating and resuscitating an old and drudge.

We must be wary about the other two methods also—one based on the assumption that the past is likely to repeat itself and other depending on bursts of intuitive enlightenment.

More often than not, old remedies do not prove effective since no two situations are truly alike. The strategies of the first world war were out of date in the second world war just as these very strategies have become irrelevant after the recent war with Iraq. With the Internet, the instant communication systems and globalization, the world of 1996 is, in a sense, decades away from the world of 1986. There is, nonetheless, a lot of sense in looking carefully at 'old remedies' provided it can be ensured that these will be approached with a certain caution and skepticism.

As far as intuitive perception is concerned, its importance cannot be minimised. Many problems of science, philosophy and aesthetics, after long but unyielding cogitation, were suddenly illumined by a flash of intuitive perception. However, while intuition is a very fine and dramatic source of enlightenment, it is also very erratic. One cannot be sure that one has got the right answer through intuition. That is why it is necessary not to go by it without careful validation on the basis of empirical facts and critical and objective examination. Moreover, intuitive perceptions provide only clues; therefore, if one follows these blindly, one is liable to make serious errors in the specification and quantification of the parameters of materials, manpower, money, time and the outcomes.

Because of these problems and also because a lost opportunity is seldom retrieved, it is often argued that, in the long run, it is cheaper and quicker to evolve new programmes on the basis of systematic *action research*. Though the initial decision making takes more time, it reduces the incidence of arbitrariness and subjectivity and very often prevents the commitment of a large order of resources on hasty, ill-advised and widespread initiatives.

Another seldom recognized but a major advantage nonetheless is that the action research approach creates a culture in which the decision makers as well as the participants in implementation recognise the possibility of failure and, therefore, try to establish mechanisms for documentation, monitoring and evaluation of programmes. In the absence of this kind of self-critical approach, in course of time, every programme acquires a sacramental aura and, therefore, tends to discourage questioning and thereby continues indefinitely, irrespective of costs and outcomes.

Those who have conducted action research consider uncompromising transparency as its first methodological imperative. In their view, besides transparency, meaningful and credible action research also requires:

(a) a careful and well-articulated statement of the reasons for undertaking the proposed action-research programme;

(b) the formulation of the hypothesis relating to the interplay of various factors and variables on the basis of sufficient and credible empirical information;

(c) a detailed temporal, spatial and institutional plan regarding the type, quantity, quality and mix of inputs to be employed for programme implementation;

(d) the specification and quantification of the interim as well as the final outcomes envisaged within a pre-determined time frame as a result of the proposed programme of action;

(e) the spelling out of the extraneous factors and vested interests likely to interfere with the faithful implementation of the action research programme;

(f) the setting up of an independent, competent and sensitive mechanism for documentation, data collection, analysis and appraisal;

(g) an empowered body capable of making deliberate changes in the ongoing programme, for reasons to be documented in detail; and

(h) the formulation of succintly stated criteria for final evaluation.

It is essential that those initiating and also those participating in an action research programme should recognise and unreservedly state that action research has been taken up because nobody really knows *for sure* what needs to be done to achieve the desired objectives. Firstly, it is dishonest to take up a project for action research (or any research) when those initiating it believe that they know what needs to be done to obtain the desired results. At best, it can be claimed that what is proposed to be done represents the *best* of the alternatives considered. Secondly, it is patently unfair to find fault with anyone if an action research project has finally to be wound up because the evisaged results did not accrue in spite of strict adherence to the employment of various inputs etc. according to the hypothesis and the plan of action. Unless these two basic tenets are met, no meaningful action research is possible.

It is a pity that in spite of programme after programme for certain objectives failing in one plan after another, new initiatives involving tens and hundreds of crores of rupees are taken up on an extensive scale without trying out the proferred solutions on a limited scale through action research under carefully controlled and monitored conditions. It would be highly desirable if, in every five year plan, a programme of action is drawn up and provided for, for undertaking action research in respect of problem areas and new initiatives.

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Ten years have passed since the adoption of a new National Policy of Education. This policy, which was supplemented by a Programme of Action (POA) containing a detailed strategy for its implementation, laid down that its implementation should be reviewed once every five years. It goes without saying that progress of the implementation of the POA should be reviewed immediately, in detail and with utmost rigour. There is, however, a strong feeling in many quarters that the National Policy of 1986 should also be reviewed very critically and thoroughly in the context of the new perceptions of national and global perspectives. We do not know whether the policy makers at the apex level are attending to these tasks. However, we do know that there is nothing which debars us from the identification of items in the POA which have remained substantially or wholly unattended.

In the above context, we wish to draw attention only to three problems which need immediate attention. The first problem, as we all know, is of numbers; we do not know how to cope with them and yet, we are unable to bar the hordes from forcing their entry into the system of higher education.

The second problem relates to the baby-sitting function of colleges and universities. The majority of undergraduate students are *per se* disinterested in education. They are there because they have nowhere else to go and since they are in the system, they feel they might as well obtain a degree. Given this lackadaisical attitude of the majority of students, the whole atmosphere gets vitiated. The managements do not care what goes on in the institutions in their charge; the teachers have no incentive to study or teach; and, the government and society at large too do not feel motivated to provide even the critical minimum of resources required for keeping the system going.

The third problem which has persisted in spite of the adoption of a National System of Education relates to wide disparities in the levels of learning across institutions, universities and states. These disparities make a mockery of the degrees awarded as well as the concepts of equality and vertical as well as horizontal mobility.

Perhaps, all the problems described above, though serious, can be tackled only if we give up some of the notions ingrained in our psyche. Let us, therefore, think of an entirely unorthodox scenario in keeping with the heresy of wanting to delink degrees and jobs. Already, we have started talking of distance education not only as an alternative system but also as a means of enriching and diversifying institutional education. At least in principle, we have also conceded that a student can approach the agency responsible for certification (i.e. granting degrees and diplomas) through diverse routes. Even Delhi University allows women candidates to appear privately for certain examinations.

Given the many concessions we have already granted to free students from the custodial constraints of classroom attendance, it is time we consider (maybe, in the beginning, as an exploratory exercise) whether we can not dispense with the requirement for enrolment in colleges and universities also. Of course, those who want to go to these instituions and attend classes should be encouraged to do so but there is no reason why we should continue to support hegemonistic institutions surviving only on the basis of the suzerainty conferred by the government or on the strength of the inflexibilities of the educational system.

Why not allow students to decide where and how they wish to study and permit them to appear in examinations at the universities of their choice? If this is done, colleges will survive not on the strength of their status as recognised and affiliated institutions and the requirements of attendance but on the inherent value of what they offer through classroom instruction and other programmes of non-scholastic learning. This will force colleges and universities to sit up and look at their strengths and weaknesses in a competitive framework. Simultaneously, it will also free educational institutions from the burden of performing the unenviable role of baby-sitting for a mass of listless students.

So far as the systems of education are concerned, irrespective of the merits of the departures, for sometime now, we have been moving away from the pre-occupation with the single line processes for the delivery of education. More and more people are concerning themselves with the quality of the products and the outcomes of education. Perhaps we have to go the whole hog now and concentrate almost exclusively on how to ensure that nobody will get a degree unless he or she is truly up to the mark. It seems that we will be able to improve the competence levels of graduates and achieve the objectives of comparability and mobility only if we do so.

In the above context, it is essential that steps should be taken immediately to revive the initiative to establish a National Testing Service which, as the Programme of Action envisaged, would develop "a quality control mechanism to organise nation-wide tests on a voluntary basis so that norms can be evolved for comparability of performance and also for conducting independent tests". The proposed National Testing Service, if established, will also, independently and from the outside, provide valuable support to the systems being set up for assessment and accreditation.

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Listening as an Educational Agenda

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Introduction

There is a world of difference between a culture of silence and a culture of listening. Those who listen, do so because they have chosen to do so. The practice of listening embodies a value system - it reflects the esteem we give to hearing, hearing our own conscience and hearing others. Those who are silent are silent, either because they have chosen to be silent, or because they are subjected to silence. My chief concern in this paper is to focus on the two conditions of listening and being silent, and the power relations between them. I hope this will lead to an understanding of why there is a lack of voice on the part of those who live what Friere calls 'the culture of silence' (Freire 1972).

Within this general rubric, I am disturbed by two major research/ educational questions which I attempt to explore in and through this paper. The ideas behind the questions are interim; none is well-formed yet. I would like to share these with you, to receive your feed back, so that I can continue my own thinking in the light of our evaluation. The two major questions are : (1) In any communicative situation, who decides who shall speak and who shall be heard; and by what criteria is that decision made? (2) In any self-reflective practice, does the practitioner critique his/her own practice of self-reflection, and thus raise self-reflection from the status of conceptual theory, to show the *reality* of what self-selective practice might be? In my view, it is not enough only to talk about self-reflection; we have to *do* it, we have to show the process of self-reflection in and through our living practice, in order for it to have any meaning and impact on our own and on other people's lives.

Who Shall Speak ?

Relating the radical change in human history from subsistence economies to market economy, and the switch from vernacular to taught language as well as from breast to bottle, Ivan Illich arrives at an illuminating conclusion : "As language teaching has become a job, it has begun to cost a lot of money. Words are now one of the two largest categories of marketed values that make up the gross national product (GNP). Money decides what shall be said, who shall say it, when and what kind of people shall be targeted for the messages. The higher the cost of each uttered word, the more determined the echo demanded." (Illich 1981:29). Illich's comment is quite insightful. But it is simply conceptual and, more importantly, it reduces an extremely complex issue of personal and professional lives into a question of economic development.

The question : 'Who shall speak?', might be better understood with reference to a contemporary incident illustrating to the construct of competing freedom. The illustrative case is Salman Rushdie's book; *The Satanic Verses*, and the 'fatwa' imposed by Ayatollah Khomeini.

Most national and international law has provided for people's freedom of speech as a fundamental right. People's right to exercise this freedom of speech is defended on grounds of social justice and expressive liberty. Rushdie sees himself as an artist who is entitled to explore any art form that most appropriately helps him to express his artistic being. "Literature is where I go to explore the highest and the lowest places in human society and in the human spirit, where I hope to find not absolute truth but the truth of the tale, of the imagination and of the heart" (Rushdie 1989; in Appignanesi and Maitland 1989). He also uses his art form to challenge received wisdom and established structures, in his attempt to make people think and question the monoliths of society:

> "It seems to me completely legitimate that there should be dissent from orthodoxy, not just about Islam, but about anything.... One of the things that a writer can do is to say: Here is the way in which you are told you are supposed to look at the world, but actually there are also some other ways. Let us never believe that the way in which the people in power tell us to look at the world is the only way we can look, because if we do that, then that is a kind of appalling self-censorship". (op.cit., p. 29)

On the other hand, there is a view that people's most deeply cherished (sacred) values and beliefs must be respected and not exposed to open scrutiny. The response of a large section of the Islamic community to Rushdie's work was one of outrage that someone could offend their religion so cruelly. The outcry varied in intensity and forms of expression : from moderate forms of writing to Rushdie requesting him to withdraw the book to less moderate forms such as public condemnations around the world and the book burning at Bradford to the most extreme forms such as the 'fatwa' imposed by Ayatollah Khomeini. The fatwa of the Ayatollah was communicated in such words:

> "I would like to inform all the intrepid Muslims in the world that the author of the book entitled "The Satanic Verses', which has been compiled, printed and published in opposition to Islam, the Prophet and the Koran, as well as those publishers who were aware of its contents, have been sentenced to death. I call on all zealous Muslims to execute them quickly, wherever they find them, so that no one will dare to insult the Islamic sanctions. Whoever is killed on this path will be regarded as a martyr, God willing" (in Appigniasesi and Maitland, op. cit.).

The legal complexity produced a variety of responses at the time of the controversy. The Ayatollah's 'fatwa' was lawful within Islamic law, but clearly it could not apply within the legal framework of British society. Rushdie was entitled to freedom of expression, provided he did not mock the Prophet, which was against Islamic law. The laws regarding blasphemy in Britain to apply only to Christianity. In England, as in many other countries in the world, there is no recourse to the legal system for religious minority groups who feel that their fundamental legal and moral right to protection from violation of their faith has been violated.

Whose freedom was paramount? The artist's or the community's? And who decided? In the Rushdie case this was not just a question of academic debate; at one point, world peace was at issue.

Competing Freedoms

The Rushdie case is an excellent, though positively disturbing illustration of a situation of competing freedoms, where neither side is able to talk to the other, where there is incommensurability, in the sense that each side is making judgements from within its own set of solidified traditions about the other set of equally solidified traditions. Neither side is prepared to budge; neither side is prepared to critique its entrenched position. There is no way out, other than force. The use of force usually leads to a situation of a single freedom, where the victor claims the right to make decisions on his own condition about the condition of those vanquished. Usually, force does not lead to multiple freedoms.

In the fight for a single freedom, the need for awareness, for criticality and for conscientization, is forgotten or at best blurred. In a situation of competing freedoms, as in the Rushdie case, it often disappears. And this, then, is when authoritarian structures both of the collective and of the individual mind, solidify. Edward Said elegantly comments : "The history of thought, to say nothing of political movements, is extravagantly illustrative of how the dictum "solidarity before criticism" means the end of criticism. I take criticism so seriously as to believe that, even in the very midst of a battle in which one is unmistakenly on one critical consciousness if there are to be issues, problems, values, even lives to be fought for" (Said 1984). This indeed was the issue in the Rushdie case.

Freedoms compete because of lack of criticality and criticism. Rushdie and Ayatollah are both entitled to their freedom to think and act, but only within their own traditions and established systems. Criticism, however, depends on the recognition that one has choices. The ability to make choices depends on whether a situation exists wherein the decision to make one's own choices is in fact an established piece of the socio-legal context. No doubt, this ability is critically dependent on power relations : where one party has the right to make choices, and is aware of that right, while the other party has neither the right nor the awareness that the right is denied. Such is a totalitarian context, in which one party has colonised the right of the other, and has established a credo that this situation is the norm. That is what is referred to as the colonisation of mind. The resultant culture is one of hegemony, the resultant relation is one of hegemonised and hegemonists. The latter have the right to make choices, are aware of their power to exercise that right, and do exercise it to keep in ignorance those who have neither the right nor the awareness of the denial of that right. Their choice is to deny choice to others. Their freedom is to deny the freedom of others. No competing freedom here; only the rights of the mighty.

Freire (1972) vouches that "Conscientization' is viable only because men's consciousness, although conditioned, can recognise that it is conditioned." In totalitarian societies, there is little opportunity for conscientization, for we are made to believe that the structural relations between the hegemonist and the hegemonised, the colonizer and the colonized, the dominator and the dominated are the norm, the eternal, universal ones at that. In fact, such structural relations and the consequent power and control can be exercised through definite patterns of communication that further establish particular social relations. The entire enterprise involves hegemonies and colonization, physical, cognitive and spiritual, in which particular norms, values, beliefs and interests in society are made to seem eternal and universal.

The Educator's Responsibility

I believe that my responsibility as an educator is to go on making attempts to help people to become aware of the processes, structures and relationships in their society that warrant or deny them the right to make their own choices. My responsibility is to expose these processes, structures and relations so as to enable people to realize that their own consciousness is conditioned. My responsibility is to engage in honest and transparent practices so that the humanbeings I am educating perceive these practices to be free from hidden agendas of domination and control. I am aware that the proposition of such a responsibility for an educator can sound pompous. But, can't it be a dream? I would further emphasize that if I can dream and stop dreaming, I would run the risk of forfeiting my own right to make my own choices. I have spoken all this, by drawing on my personal experience and professional concerns, with self-reflection, since I cannot ask others to make public the beliefs, values and assumptions underlying their actions, I cannot ask others to scrutinize these carefully and critically in the light of reality and social totality, unless I myself am willing to submit my own beliefs, values and assumptions to the same public critical analysis.

My submission is that this is not the general case. It is certainly not the norm in the world of educational research. How many of us would *grasp the nettle?* It is not even the case in the world of educational action research (McNiff 1992), the world of reflective practitioners (Schon 1983) or the critical pedagogist (Ashley 1992). In all these educational worlds a great deal of lip-service is paid to the concept of liberation and emancipation, to the raising of consciousness and critical awareness. Yet there is little demonstration, particularly on the part of self-styled "expert academics", of submission of their assumptions and beliefs for public analysis. Ironically, nor is there any general expectation within the normative culture of the academic world(s). This indeed is an ominous trend. In the academic expertise order, those who are in higher education and in higher echelons of the educational hierarchy hardly have any public and/or professional accountability. They have no responsibility to offer accounts of their professional competence, even when they 'support' and 'train' practitioners on award-bearing courses. BUT, there is a universal expectation that the practitioners have a duty to account for and expose their practice to public scrutiny. Or are there emerging trends the other way round?

Power and Legitimacy in Education

The issue of power and legitimacy bring us back to the question of competing freedoms. What counts as valid educational knowledge and who is entitled to know? Who determines the criteria by which these issues might be judged? These questions are highly problematic and require enquiries and self-reflection. The common assumption is that those who are engaged in educational research or those who organise and participate in national and international conferences are entitled to *speak* while those whom they train and support, usually practioners in schools, in literacy and non-formal educational programmes, are required to *listen*. The reality is that the educational experts in one or the other way are teachers or need to be so, along with those they are supporting—and therefore their practice must genuinely turn towards partnership in which each party has a right to speak and each party is prepared to listen to and learn from the wisdom and the experience of the other. But this is evident only in exceptions. For too many educational experts and researchers, particularly in the universities, regard themselves as an elite, a caucus of what Chomsky calls 'the secular priesthood' who tend to be reduced into believing that they can colonise the thought processes of others, that they can insist that those whom they are educating renounce their freedom to make their own intellectual choices, and submit to the secular priesthood. This goes, literally, without saying:

> "For many intellectuals the basic concern is probably that of articulating and spreading an aspect of the rationality at their disposal, namely a feature of the dominant tradition. It would not be realistic to expect a very different cognitive attitude from an intellectual community composed predominantly of thinkers who usually soar to the level of 'executives' of thought and 'administrators' of concepts .... But, we hear nothing else also because, in spite of having risen to high levels of cognitive awareness, we have little familiarity with what it means to listen; we are in fact imbued with a logocratic culture in which the bearers of the word are pre-dominantly involved in speaking, moulding and informing"(Fiumara 1990).

Action research offers, in John Elliot's terms (Elliot 1991). a 'creative form of resistance' to this tendency. Action research is a form of practice that encourages democratic relationships and negotiated freedoms. You would agree with me that this is a nice ideal; but, I think, you would also agree with me that it is an illusion. I am inclined to think that most so-called democratic action research is well embedded within a totalitarian superstructure, in which the same old freedoms compete, *between who speaks, who listens*, and *who decides*. In this entire enterprise, the process of conscientization is contained and prevented through very subtle forms of manipulation and control.

This brings us back to the fundamental question raised in the beginning : who shall speak? Education & educational research invites educators to exercise their responsibility to develop critical thinkers (Brookfield 1987). My perception is that educational research — and that includes action research, self-reflection and critical pedagogy — is actually underpinned by manipulated illusions that manufacture the consent of people to believe in the hegemony of intellectuals. That decides who shall speak. These illusions are created, sometimes quite consciously but mostly unconsciously, in order to legitimate academic life and consequently the status, jobs and power of academics. We don't have to travel far to see that the same power relations are at work in the administrative hierarchies in all sectors of education. And indeed in all sectors of organized and institutionalised social life. Academics tell teacher educators, teacher educators tell teachers, teachers tell students; 'big bugs have little bugs upon their backs to bite them; and little bugs have littler bugs, and so ad infinitum'.

Doing Self-Reflection

Self-reflection seems to be becoming a professionalised part of 'normal' scientific discourse that is based upon a consolidated set of conventions. The literature on self-reflection has been getting richer and richer with all sorts of recommendations to self-reflect. But, it is desperately impoverished in terms of descriptions of self-reflective practice, in accounts of educational researchers that explicitly show their own process of self-reflection. There is a strong need for a literature that demonstrates practice based knowledge - a knowledge and wisdom generated from practical enquiries of school teachers and teacher educators, - because this knowledge is more relevant, valid, democratic and less exploitative, less hegemonic than conventional research. The task is to identify and single out accounts of personal and professional practice that are illustrative of self-reflection from academic and research publications in which the idea of self-reflective practice is propounded as a hypothetical construct with all the intellectual niceties. My fear is that unless the idea of self-reflection is examined and characterised in and through practice, it might reduce itself to what Gadamer calls 'speechifying'. To wit, in 'speechifying' the 'meaning' of self-reflection lies only in its lexical definitions, which is no meaning at all. Meaning lies not in the surface structure of lexical definitions, but in the deep structures of our language and our lives (Chomsky 1986). It is only through living our lives in the way we do that our true meaning emerges, and our values are realised as action.

This makes me turn to the idea of dialogue. In the same way that 'self-reflective practice' has become a buzz word, 'dialogue' is another example of how a deeply significant concept has been popularised and trivialised almost to the point of vulgarity. There are a number of TV programmes (including the Countrywide Classroom of UGC) that illustrate my point. Dialogue is deeply significant. In our practice as educators we need to take the idea of dialogue very seriously, for here is the basis of self-reflective practice. As educators we need to consider what the foundations of dialogue are, we need to reflect on dialogue - its nature and its use. We also need to reflect on those very self-reflections, to test our own practice against our understanding of the values of dialogical practice. DO WE LIVE OUT OUR VALUES?

In her excellent book on the nature of dialogue (Fiumara 1990). Gemma Corradi Fiumara suggests that what is called dialogue often takes the form of competing monologues - speakers at war with each other over who has the right to speak and be heard. Warring monologues not only constitute the nature of most conversations, they also characterise the expressive style of most texts, including texts on education and educational research, even texts for mass literacy programmes. And seldom, if any, is there a clearly articulated need for a *Philosophy of listening*. It seems to have become an impulsive assumption that we have a right to speak and exercise our own voice, but there is no balancing obligation to listen. Rights carry with them responsibilities and obligations, and this balance would constitute a just situation. Clearly is the case of speaking and listening, justice is not the issue.

The concept of self-reflection and dialogue needs to be related for two reasons. First, they are in danger of becoming 'pop' terms, somehow meaning all things to all people. Second, I believe, they are really at the heart of good practice. Good practice is one that leads to a good social order and therefore it needs to be taken seriously. And in order to be taken seriously, some sort of demonstration needs to be offered in the literature. The research community has to examine its validity' so as to further demonstrate what self-reflective, dialogical practice actually looks like. It is really not enough just to speak about these matters and ideas, as armchair, as Maruti car, Philosophers do, in a conceptual sense. The trick is to do it, and to make explicit that one is aware that one is *doing* self-reflection and dialogue, and invite criticism on one's actions and reflections.

Now, in the beginning of the paper I said that there is a world of difference between a culture of silence and a culture of listening. By now, it should have been clear how knowledge is controlled in very subtle and manipulative ways in the so-called democratic societies. Given an understanding that the world of educational researchers is supposed to be a democratic society, it seems mandatory to explore what and how regulative systems are enacted even within this world that determines who speaks and who is listened to. I have expressed the fear that the concepts of self-reflective practice and dialogical practice are in danger of being vulgarised to the point of meaninglessness - semantic saturation - because their meanings are held to lie in lexical definitions rather than in the real-life accounts of reflective practitioners. Such practitioners expose their actions and the values that inform those actions to the critical commentaries both of themselves and the community.

Having said all this so far, I need to make it clear that I am aware that I myself am endorsing a culture of silence; I am myself trivalising and rendering unproblematic the idea of self-reflective practice and the nature of dialogue because, so far in this paper, my form of discourse has essentially been non-self-reflective and non-dialogical. I am using an extremely powerful form of communication - the written word - which establishes its own culture of domination (Said 1984; Foucault 1980) Clearly, this domination will be multiplied in strength once this paper goes into print. Not once in this paper have I addressed you, the listener and reader, as a real living entity; a knower and a practitioner who is capable of critiquing my ideas in this paper. Not once have I attempted to draw you into the discourse, and turn it into a dialogue. All through it has been my own monologue. I have assumed my right to speak. I have presumed that you do endorse that right by retreating into a world of silence. It may be argued, of course, that the written (and printed) word is essentially expressive in form, and cannot support a dialogical form, particularly in first person accounts. I would counter this by suggesting that the very form in which the written word is offered may be locutionary or inter-locutionary; it may be in the propositional assertive form of the committed speaker, or in the tentative questioning form of the committed listener. So, the challenge before me is to adopt a new language and a new attitude toward myself, and move from the position of one who knows to one who wishes to learn, to listen to the voices of my listeners, even anticipating their rival claims. I am also prepared (sometimes it requires conscious effort to prepare myself) to listen to the inner voice of my own self. Further, as an essential step in my learning process, I must move from a position of dogmatism to a new position in which I can hold my concepts open. I need to supress my voice of intellect and hold in check my passion to express my ideas and commitments so as to listen to differing and dissenting voices, within my being, and all around me.

Towards Listening

Fiumara (1990) calls for a philosophy of listening as 'the other side of language', the essential activity of tuning into the unspoken word and unheard voice of the other in an attempt truly to reach intersubjective understanding. Carl Rogers restates the theme brilliantly well:

> "When I can hear someone it puts me in touch with him; it enriches my life. It is through hearing people that I have learned all that I know about individuals, about personality, about interpersonal relationships. There is another peculiar satisfaction in really hearing someone; it is like listening to the music of the spheres because beyond the immediate message of the person, no matter what that might be, there is the universal. Hidden in all personal communications which I really hear there seem to be orderly psychological laws, aspects of the same order we find in the universe as a whole."
>
> "Can I hear the sound, and the shape of this person's inner world? Is it going to be possible, for me to do that and stay with it? Can I resonate so deeply to what he is saying that I sense the meaning he is afraid to express as well as what he is saying ?"(Rogers 1980).

Martin Buber speaks of the essential I - Thou relationship, where a philosophy of interpersonal listening is not just one-directional - doctor to patient, lawyer to client, police to citizen, teacher to taught - but is reciprocal (Buber 1937). I and Thou are intertwined, each to the other, each accepting the responsibility of listening to the other's voice, each engaging in the dialectical dance where we pick up the cues from the other about when it is our turn to lead and when to follow. It clearly requires hermeneutical skills too.

I am calling for a philosophy of listening and a philosophy of self-reflection, and, most importantly, for these to be shown through the reality of our own lives. And, because I have tried to make a case in this paper for meanings to be expressed in a living sense as well in a conceptual sense, I have to show that case in my practice. I shall exercise my choice of using this paper for demonstrating how listening and self-reflection are to be characterised. Let me then try to be very explicit. I hope to indicate a possible methodology for self-reflective self-reflection.

Self-Reflective and Reflection

My basic problem is that I, like many others, have to talk of education and about self-reflective practice in a conceptual sense. Most research issues in the literature of action research focus on the methodology of action research. In other words, action research becomes a tool, an instrument. I have tried to focus on self-reflection which underpins action research as a form of life. Such a research orientation has more use value for the lives of real practitioners who are trying out their values in their practice.

Self-reflection is a dialogue with the self. I have tried to discuss in this paper how dialogue is often construed as a monologue of expressive language. There is a strong need for conscious listening as part of dialogue. In my self-reflection I need to listen to the inner voice of my own values-base, and also actively listen to the informing voices of wise experienced others, and test my ideas against theirs.

I need to clearly say that my practice is informed by the values I hold. If I require others to make their stories of experience public and to account for their educational practice, I must do the same for the sake of social justice. I have to by-pass the warring monologues situations between my expressive self and my listening self. I have to arrest my expressive self from colonising my listening self. I have to stave off the warring monologues situation between myself and those with whom I am not in agreement. I have to hedge the temptation to hegemonise my own self-righteousness and self-justification. I have to be transparent, both in my dealings with others and also in my dealings with myself. I can write this paper in a dialogical sense. For that, I must refrain from sweeping my readers along by the use of polemic, stylistic convention, and subtle literary techniques that manipulate and control the consciousness. And I have to write honestly, allowing my doubts to show through, allowing the uncertainties and sometimes unclear formulations to be evident. I have to present this paper as an unfinished task, because that is what it is.

You might contrast this with the conventions of scholarship handed down to us through generations. The culture of academic writing insists on well-formed pieces, so that the chaos and confusions of the process of coming to know is re-moulded into an artfully manicured end-product. The row-process of real-life thinking in action research and self-reflection then becomes the sanitized paper in the conceptual form. The magic and mystery are carefully screened out, to produce a pure product that would be acceptable to the caucus of the secular priesthood. I must be aware of the consequences of going against the mainstream. And if I encourage others to do what I do, I must always point out to them the risks that they run by going up against the caucus of the secular priesthood who would use techniques and strategies of control to bring them back into line. One constantly encounters the severe sanctions of critics who are not prepared to engage in hermeneutical practices but proceed from the self-righteousness of their own protected wisdom.

So, what I have done is to indicate, clearly and explicitly, that I have exercised my choice to break with the propositional form that is the norm of received knowledge and the norm for communicating this knowledge in writing. I think it is essential to establish a tradition of critical self-reflection within the living theory tradition. Thus, I am flagging the need for a form of expression that itself demonstrates the process of self-reflection. This hopefully would help self-reflective practitioners to chart how they can generate and test their own theories and thereby become critical about their own self-reflective practice. This to me is the essential power of action research. The processes of action research may be used to critique the process of doing action research. The process of questioning may be used to question the process of questioning. The living educational theory approach recommends that we must constantly engage ourselves in questioning in order to move systematically towards a situation in which we may live out our values in our practice (Whitehead 1993). I think we can use this idea of a living educational theory in a generative sense, to embrace the idea of a theory of self-reflective (critical) self-reflection. Not only do we ask questions such as 'How do I improve/change my work?', but we can also then turn the question back on itself and ask, 'How can I improve/change the process of asking how can I improve/change?'. This openness to questioning the process of our own questioning is a clear sign of the transparency of the wise reflective practitioner, who is passionately committed to his own personal and professional knowledge, but always holds knowledge as incomplete.

Am I doing all this in this paper? Am I showing that I am still working on my ideas and accumulated experiences? Are there gaps and flaws in my argument? Is it open to criticism? I hope so. I have tried to present up the centrality of two interrelated processes here, and to show how I take them so seriously as to incorporate them in the form and content of this paper. The two processes are *self-reflection and dialogue.* One informs the other. Self-reflection depends on dialogue, with the self and with others, and dialogue involves the process of listening as of equal importance as speaking; the balance comes through self-reflection. Thus I have suggested that there should be a heightened awareness among the research community of the need for a philosophy of listening as a central aspect of dialogue. Listening involves hermoneutical skills which help the listener to go beyond the given of what the speaker is trying to say, and to intuit the inexpressible. If these issues are taken on board as important considerations by the research community - that is important enough to act upon, and not only speak about, then I feel my paper will have had some impact.

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Global Transformation and the Search for a New Education Design*

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This paper intends to propound an educational heresy: that is, to suggest that all societies around the globe face an increasingly similar set of educational options, that these options cannot be dealt with by our inherited models of higher education; that, indeed, these inherited models now form part of the global problematique; that there is a worldwide need for a new educational design; that parts of this new educational design are now visible to us, and finally, that the real educational challenge of the future will be to articulate those integrative principles which should form the basis for, not only a new system of learning, but also a new way of thinking about learning.

The Inherited Model

The underpinnings of the current model of higher education, in most Western societies, were forged in the late nineteenth century. These very same principles pervade the so-called developing world, since they were exported or implanted through the hegemony of colonial relationships[1]. The only difference, to date, has been the timing of their emergence. Two features characterize these late nineteenth century higher education models and are central to my argument in this paper. The first is that, until the sixties, higher education was peripheral to the major issues and processes in most societies. Higher education consumed relatively little in the way of public resources and, while the system educated a professional and social elite, it was not central to the labour requirements of society.

This peripheral status provided a comfortable context in which governance and decision-making systems could evolve, largely derived by the needs of faculty or a sense of noblesse oblige exuded by

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institutional leaders. Very few people, inside or outside third of institutions of higher learning, paid attention to these decision-making systems. The only time this occurred was when there was a challenge to agreed upon norms, such as academic freedom, or a perceived threat from an interested or overly zealous outside world. Needless to say, the peripheral status of higher education has and is rapidly changing. Now considered central to a knowledge economy and society, and to the development aspirations of so called Third World nations, higher education absorbs billions of public and private funds. As a result, most societies have a clear and deliberative interest in higher education, how it decides and the priorities which result. So too, various special interest groups place a widening and often competing set of claims at the door of the academy. Managing this plethora of competing interests and claims is a task which confronts most institutions of higher learning. Zero sum and double bind games are rife within the so-called ivory tower.

The late nineteenth century higher education model, as it relates to decision-making, is increasingly unable to cope with the axial role higher education plays in most societies. While many in institutions see this incongruity as a threat to academic freedom, it is not. The core tension is between a model designed for an institution on the social periphery and the ability of that model to provide a framework to guide an institution at the social centre. Unless an entire society is prepared to adopt the late nineteenth century decision-making model of higher education as its norm, a portent which is highly unlikely, then that model will have to change. Thus, my first point when an institution, function or issue moves from the social periphery to the social centre, change is not only to be expected, but is also inevitable, Indeed managing this change process becomes a critical task. I will return to this theme later.

The second attribute of the late nineteenth century higher education model was its content focus. The central concern was curriculum: what should be taught and how that knowledge should be organized[2]. This concern also spilled over into a hidden curriculum: what values should be acquired in the context of learning. the early expression of this content focus in the late nineteenth century higher education model reflected the prevailing value of the elites. In the West, philosophy, theology and the historic languages were taught in a context of authority, duty and obedience. Universities have long since blotted, from their collective memories, the bitter struggle which ensued over proposals to introduce the physical science and engineering into the curriculum, let alone the debates which surrounded the very idea of professional education having a legitimate place in higher learning.

Over the course of the twentieth century, this content focus of the prevailing higher education model has remained in tact. its major resiliency has been to broaden out, in the face of social and economic change, the base of the "legitimate curriculum".: in higher education we now teach medicine, engineering, business,nursing, law, education, science, etc. We also teach, in some universities, such "disciplines" as driver education, mass media, home economics etc. The current model, in fact has been so malleable that many people claim today that it has no focus whatsoever - it is curricular licence.[3] The context of the content model has also changed: the new values to be absorbed are those of self inquiry, critical thinking, and self actualization. But values they are.

Thus, my second point: the major response of higher education, and its late nineteenth century model, to social and economic change has been curricular change: changing what is legitimately taught. Until recently, this response was satisfactory: at least it allowed business as usual. But this response, essentially one of differentiating the content focus of the original model, is proving to be increasingly unsatisfactory in the face of a set of issues and dynamics which are not amenable to a content solution per se.

Consider, for a moment, some of the dynamics intruding upon higher education today:

- since World War II, Universities have faced continuous and growing demands for accessibility, from a broadening and segmenting base of the population.
- The pace of knowledge creating has exponentially doubled each decade since World War II.
- New intellectual industries have emerged and are forecasted to play central economic roles in the future.
- Research and development, once of province of the individual scholar, is now conducted in widely distributed teams in which the academic may be but one part, or play no part.
- Research and development expenditures by Governments and corporations are now strategically driven with various pay-backs expected.
- Knowledge, once scarce, is now diffusive and is being created in a multiplicity of contexts outside of higher education.

- Access to knowledge is no longer controlled by higher education institutions. New telecomputing technologies are democratizing this process. People increasingly have a curriculum which is rooted in society rather than institutions.
- Public policies of all kinds are applied to higher education, (eg. employment equity) and designed to be achieved through it.
- Mass illiteracy increasingly affects the ability of developing nations to achieve their social and economic goals.
- In a real time electronic world, the circulation of information knows no boundaries. The right of usage of information overpowers the right of ownership; the latter being an increasingly outdated idea.
- Initial education and training are increasingly redundant as a basis for long-term survival in a job, profession or career.
- New global electronic information systems and networks have the potential to create a new and more calcified information gap between rich and poor nations.
- The entire concept of time, within the economy and society, is being re-thought and, in some cases, being made irrelevant.

Rural de-population in the developing world generates a dual pressure on higher education: exponential demand for access in urban centres and the need for creative "stay options" in rural contexts.

This list could go on endlessly. What do these dynamics have in common? Essentially, they raise issues, for higher education, of a process nature. They are, and increasingly face higher education, not with issues of what to learn, but of how to access learning, how o organize research, how to manage institutions and systems, how to link with technology, how to cope with social and ethical issues, how to distribute opportunity, and how to develop human resources.

The content focus of the current higher education model, forged as it was on the social periphery, is increasingly unable to deal with the process dynamics inherent in a situation where higher education is at the social centre. Content differentiation has run its course, and the accelerated process of change makes this not only clear, but also gives a sense of urgency to the issue. The end result of this situation is that all nations of the world, developed, newly developed and developing, face the need for a new educational design; one which can cope with the process dynamics of the late twentieth century-as opposed to the content focus of the late nineteenth century.

This new design, moreover, must be created in a context in which knowledge and higher education are at the social core of nations and all that implies in terms of decision-making and obligation. In the situation, policy choices and options in higher education are intimately intertwined with those basal processes and dilemmas facing societies and cultures. Higher education, in other words, no longer has political of socio-economic immunity. Decisions made in higher education, as a result, are inevitably political in their nature and impact.

The social centrality of the context of higher education decision-making can be illustrated by examining its relationship to two of the most dominant processes operative in the world today: convergency and pluralism. The development of modern telecommunications, and the associated economic interdependencies which result, has networked the world in such a way that there is emerging a convergency in products, tastes, services and expectations.[4] To that degree we, in the world, are becoming more alike. This likeness, moreover is reinforced by an equally growing recognition that we share a common ecosystem; one which is threatened by our individual and collective actions.

Parallel to this convergent development, we bear witness to a co-equal emergence of the forces of pluralism. As people become more aware of their similarities, this very awareness breeds a consciousness of their differences and the need to preserve these. So too, people are increasingly conscious of the role that cultural differences play in such areas as business, technological transfer and, of course, education.[5] Evidence for pluralism can be found in the right of claims for the protection and fostering of minority groups within almost all nations of the world. It also finds expression in the emergency of what Ronald Inglehurst calls an "elite challenging", as opposed to an "elite directed", style of political participation among the mass of populace, in which cleavages are based on quality of life issues rather than class-based materialist concerns.[6]

The emergency of the dual forces of convergence and pluralism appears, to many observers, to be a contradictory tendency, responsible for tensions, of various kinds, around the globe. This however, is not necessarily the case, for the outcome depends substantially on whether one perceives each force as operating according to its own logic and momentum or whether, alternatively, one perceives each as functioning in a complimentary relationship. It is the latter view which shapes the substance of this paper.

Within all cultures and societies, activities function at different levels, as, of course, does human thought itself. Consider, in this regard, the distinction, in levels of activity, between ends and means. Ends ref to the various goals or objectives we set for ourselves as individu and for our societies through various forms of collective decision-makin Means refer to the ways in which we hope to achieve our individu and collective goals.

Using a simple matrix, it is possible to have at least four se of relationship between ends and means: (1) common end various mean (2) common end common means; (3) various ends various means; (various ends common means. While in the philosophic tradition of th West, there has been a perennial desire to cement a consiste relationship between end and means, at least in the ethical sense, oth societies have different perceptions of the normative basis of th relationship.[7] There is undoubtedly, in every culture, a domina perception of the relationship between ends and means. The key poin for purposes of this argument, however, is that ends and means exi at different levels within a given society.

From the policy and decision-making perspective, ends can be see in terms of social options: that configuration of choices and axial issu which confront a society as it attempts to give expression to its co values, and achieve its desired future. Means, from this same perspe tive, refers to the array of possible strategies and tactics available a society in maximizing its chosen set of options.

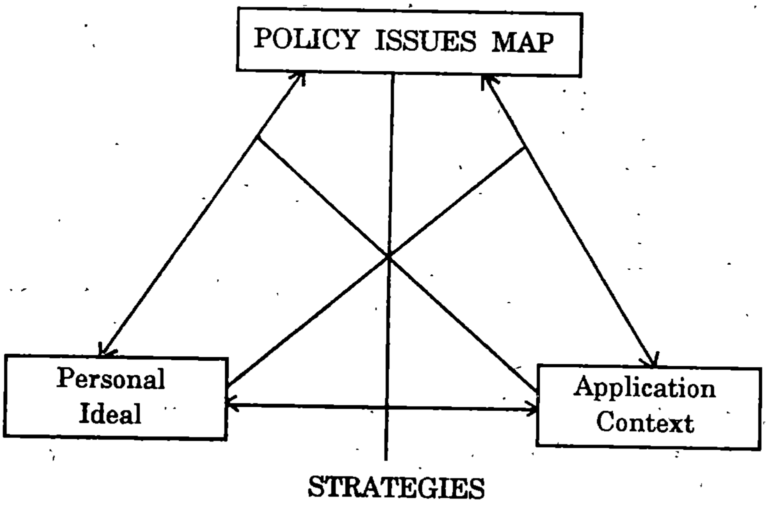
At the level of social options, as ends, all nations of the worl are becoming more alike; that is, there is convergency in the structu and configuration of these options. At the level of strategy, mean societies are becoming increasingly dissimilar. There is a vast pluralit of strategies available, within and between societies, through whic options are and can be pursued. Far too often, however, people confus pluralism in strategy with an assumed and equal divergence in th structure of social options. This basic confusion is what prevent sustained and productive efforts at global cooperation.

Due to a host of factors today, social options are converging the very same time as the array of possible social strategies becomin more plural and divergent. Unless one thinks that there is only on right way to pursue a goal or option, this is a positive and health development. Indeed, the mutual learning possibilities inherent i understanding, exploring and sharing the results of the exercise of soci strategies are immense.

The Social Options Triangle

The basic relationship between convergent social options and divergent social strategies is no more evident than in the field of education and training. On a structural level, there is developing, within education, what I call a social options triangle which binds a given policy map to ideals and context. This social options triangle provides the framework within which both options are structured and all nations increasingly are forced to make their choices for the future development of higher education.

As the diagram presented in Figure 1 outlines, the social options triangle joins three elements: a policy issues map, a personal ideal and an application context. The strategies pursued flow from how the policy issues map is drawn, how the personal ideal is constructed and how the application context is perceived.



SOCIAL OPTIONS TRIANGLE

FIGURE 1

In earlier eras, it might have been possible to reach agreement upon the elements of such a social options triangle; that is, that they existed in most, if not all societies. Typically, that is where consensus would have ended, since the substantive components of the policy issues map, for different societies, would have varied enormously. So too, there would have been a wide disparity of views on what constituted the personal ideal for a given society or the perception of the context in which choices were and should be made.

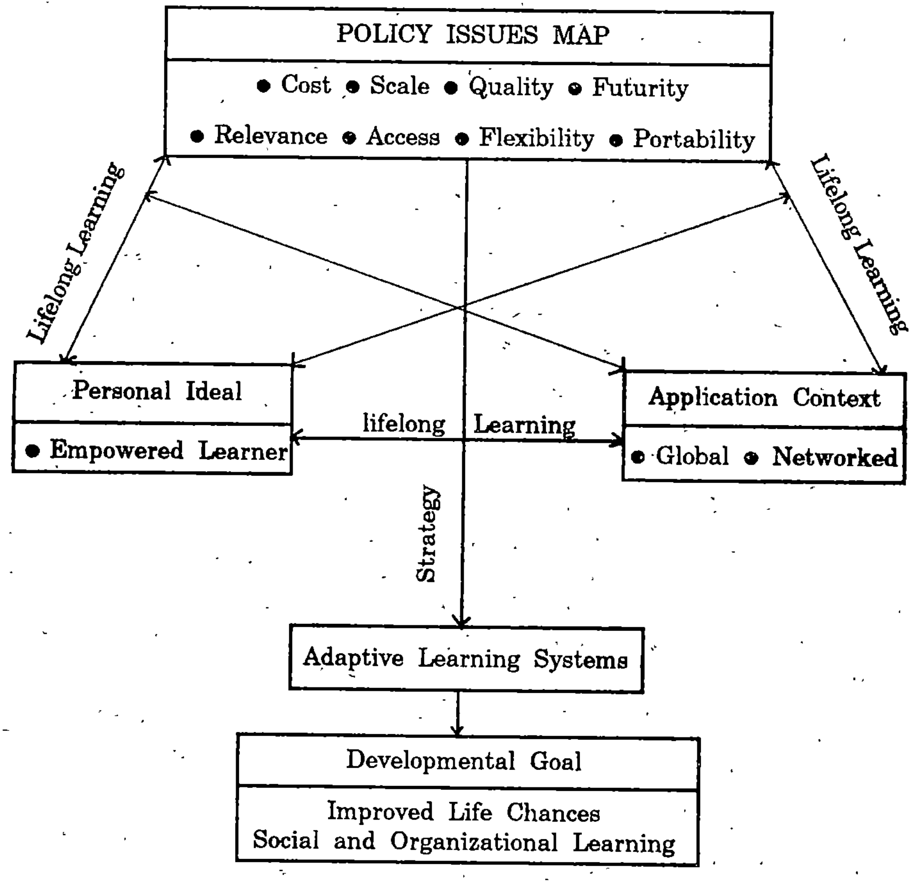
Today, and increasingly in the future, this situation is in the process of and will change. Not only do the points in the social options triangle exist in most nations, but there is also a growing convergence in the substantive dimensions underpinning each point in the triangle. The variation which remains is, firstly, a function of the salience given to the substantive elements; that is their relative importance to a society at a given point in time. A second source of variation is rooted in feasibility; that is, the degree to which the substantive element can be maximized at a given point in time.

These variations, in terms of salience and feasibility, are primarily expressions of different political, cultural and economic circumstances of a given nation. The key point, however, remains; both in terms of the points in the social options triangle and the substantive elements underpinning each, there is a basic convergence. Most nations, in terms of the social options triangle of higher education, are becoming more and more similar.

It does not necessarily follow, however, given a basic convergence in the points and substantive elements of social options triangle, that there will emerge a convergence on education strategy. For, as argued earlier, a divergent pluralism can exist at this level. one phenomenon is becoming increasingly clear, though, and that is, as nations around the globe confront a similar social options triangle, and one which is markedly defferent from earlier versions, new educational strategies are and will be explored. The purpose of this paper is to outline briefly the elements of the social options triangle, as it applies to higher education, and to describe more fully, the emergence of one such strategy which is in the initial stage of development and implementation in many parts of the globe. This strategy I refer to as adaptive learning systems.

Educational Options Triangle

The educational options triangle, (Figure 2) for all nations is increasingly similar. All nations, in terms of the policy map drawn before them, face similar issues. They must confront and configure a set of interrelated policy issues involving the cost, scale, quality, relevance, portability, futurity, flexibility of and access to education. The choices made in relationship to these issues, and more particularly the resultant configuration, are increasingly measured against their congruence with an emerging personal ideal in education and an empowered learner and selected with an eye toward their applicability to a global and networked context. The process which binds all of the points on the triangle, and informs choices at each point, is the growing demand for and social imperative of lifelong learning. The end point, or development goal, moreover, is also similar. Most nations perceive a dual and interrelated necessity in improving the life chances of people and implanting the conditions for on-going social and organizational learning.



EDUCATIONAL OPTIONS TRIANGLE

FIGURE 2

The Policy Map

As in the historic exploration of planet earth, most nations are aware that current social and technological changes are impelling them into uncharted educational territory. These same nations are equally aware of various sign posts in this territory, but are searching intensively for a map to guide them through it. What is at stake are not the sign posts, the policy issues if you like, but the way in which these issues should be configured to produce a useful and effective map to guide decisions for the future.

Various nations, during the past several years, have feverishly sought the one sign post around which their map could be drawn and all other issues be related in relative importance. In the USA, for example, quality appeared, to some, to provide that basis and a set of "reforms" of education were launched accordingly.[8] The difficulty in this case is that a single obsession with quality leaves such issues as equality unattended. In the UK, cost and relevance, emerged as dual pillars upon which the educational policy map rested. There, again, significant issues related to equity and flexibility reared their heads.[9]

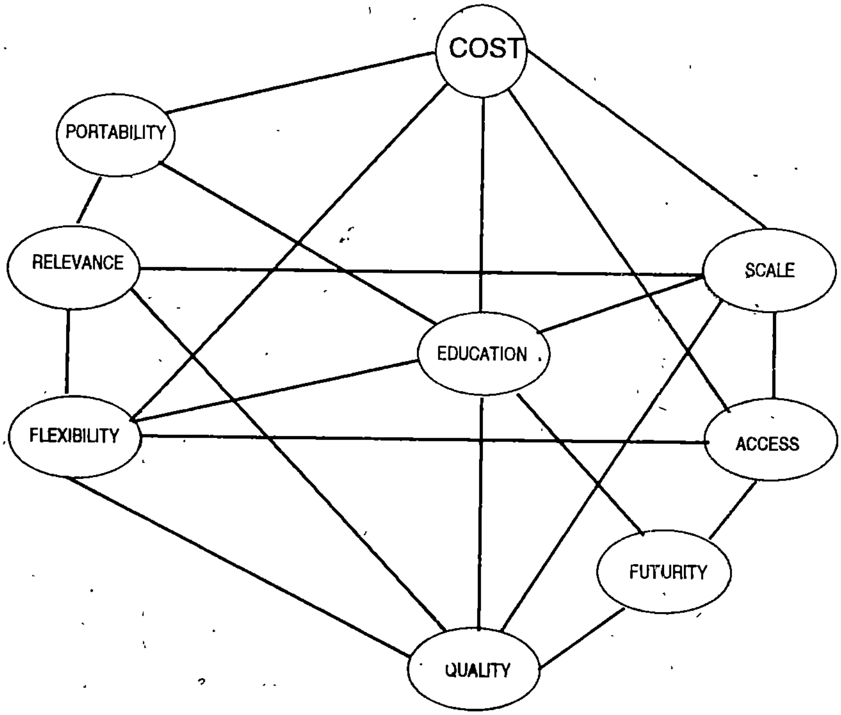
These examples illustrated the peculiar tendency in the West to think through a highly rational and reductionist lens; to search for the fundamental essence or atom of existence upon which everything else rests and is to be explained.[10] To think through a map, however, requires a different mode of perception. In particular, an awareness of the larger context and the pattern which connects points to form a whole, is a pre-requisite to undertaking a move in any direction. One does not think with a map, but through it.[11]

Applied to education, thinking through a policy map means that all points, or issues, exist at all times, for they set the boundaries of the map itself. The relative salience of each issue or the feasibility of acting on it may vary through time and case by case, but all issues are ever present. To found an educational policy map on any particular issue, not only denies this ever-present characteristic, but also forecloses on future change which can potentially alter both the salience of and possibility of acting on particular issues.

An educational policy issues map, then, is best seen and used, not as a tool for reductionist analysis, but as a vehicle for creative synthesis. Different configurations of issues in the map are required and needed at different times and for different situations. But all issues are part of all configurations.

The key point is to maintain, in all choices within the policy issues map, the relational links between all elements. In fact, creating different patterns or relationships among the elements in different situations is one way of receiving social feedback on policy decisions. And being open to different configurations prevents the development of that myopia which often shields policy makers from the people they serve.

A map is drawn between points. Being aware of the social points on a nation's educational policy map is, therefore, as critical as drawing linkages between them. Just as cities grow and change, requiring different routes to them, so to, the points on the educational policy map change in salience and feasibility for action requiring, as well different choices. To be aware of all points in the educational policy map, in the context of changes in their salience and feasibility, though, allows one to think holistically about education. See Figure 3.



EDUCATION : THE POLICY MAP

FIGURE - 3

What then are the elements, or choice points, on the world higher educational policy map. Briefly they are as follows.

Cost

While all nations recognize that investment in human resources is the key to figure long-term economic and social development, they also confront two realities : (1) that such investment is increasingly costly and (2) that such investment, given traditional modes of expenditure and implementations, is not optimal in terms of cost efficiency or effectiveness. When this realization is coupled with the growing debt problems of most governments, it is understandable why states are seeking to both maximize existing expenditures on educatio and find alternatives which are wore cost-efficient.[12] The problem o investment in human resource development through education, then will not, for most nations, be solved through a reproduction, in scale of the existing educational system, for this, to put it bluntly, is cos prohibitive. Most nations, consequently, will be guided, in the cos element of their educational policy map, by the following objectives

(1) To find ways to maximize the rate of return on existin educational investments that is to increase overall system efficiency.

(2) To find alternative, more cost effective ways, to meet new an existing educational goals, that is to create alternative, mor cost effective systems.

Scale

Both the range of needs, the numbers of people whose needs mus be met, as well as their distribution in space, have grown exponential in recent years. In an information economy, everyone is linked to an dependent of everyone else. For this reason alone, elitist approache to education are not only morally unacceptable but also counte productive.

Education has become massified and, as a result, all nations fac problems of scale. In the developing world, these scale problems cente on literacy, technical and professional training. But, so too, in the so-called developed world, scale emerges in problems of training, re-training and recurrent education. As a result, all nations will struggl to achieve the following objectives of scale;

(1) To find ways to deliver education and training to people wh are highly mobile and distributed spatially in a variety o patterns.

(2) To find ways to meet a growing set of learning needs for all the populace and, within that, the specialized and changing needs of particular segments of society.

Access

No nation, as it peers into the future, can afford socially, politically, or economically, to restrict access to education. Given the centrality of human resources in the new economy, for example, such a policy of restricted access is akin to denying oneself oxygen, whil knowing full well that it is essential to life. Beyond economic factors prolonged restrictions in access to education, given the axial role of knowledge and information in society, portends serious internal divisions within and between societies. Serious class divisions based upon access to knowledge, rather than capital, potentially await societies which do not confront access issues.

As a result, most nations in the world, today, face similar issues related to educational accessibility:

(1) To find ways to remove general and specific, barriers to access to education whether of a geographic, economic or cultural nature.
(2) To increase the accessibility, of specific targeted groups of education.
(3) To find ways in which increased accessibility can be made affordable, both for the learner and government.

Quality

As the rate of knowledge creation and distribution grows exponentially, there arises a concomitant and growing concern for quality in education. This focus on quality, at least in the so-called developed world, centers on a number of areas : (1) the importance of assuring the development, in the populace of basic verbal, computational and reasoning skill; (2) the importance of translating the findings of research into curriculum to ensure the validity of knowledge transmitted; (3) the need to improve the overall efficiency and relevance of the teaching learning process. These issues, as well, will face most nations.

Relevance

Increasingly, in all societies, there is a desire to link learning to social, political and economic objectives. Not satisfied that the educated person is a productive person, for example, governments and others are seeking ways to better match learning objectives to work and other economic objectives.[13] The relevance of education, then is increasingly seen, not only as a matter of personal development, but also as a matter of how and where education can contribute to either producing economic value, resolving social problems, or achieving political objectives. In the age of relevance, education is dominated by a new instrumentalism.

Flexibility

Another point on the policy map is that of flexibility. In most societies, historically the place of education was apart from the people who "came to it" to learn. Education, although important, symbolically was really marginal to the daily activities of society. In today's world this has changed. Now increasingly central to society, education must be taken to the people rather than the reverse. Added to this, education must be taken to people in flexible ways which fit their changing work and life styles, accommodates the shifting needs of industry and delivered in various time frames. Finding ways to build a structural flexibility into educational systems is something which has caught the attention of employers and governments alike.

Portability

As societies enter what is known as the post industrial age, and cultures edge towards a post modern age both the status of knowledge and the relationship between the generator and consumer of knowledge has changed.[14] This transition is global and in the West has been underway since the 1950's.

The increasing proliferation of information storage, transmission and, generative devices is having as marked an effect on the circulation of learning as did advancements in human circulation through transportation systems and the transmission of sounds and visual images through the media. Conventional concepts of knowledge cannot survive unchanged within this context of general transformation. Nor will the traditional passive role of the learner/knower be maintained. Knowledge is increasingly being developed within an exchange relationship, in which the learner functions within an ever-widening information market, and one which is independent of producer control. The rapid development of global course exchanges among open universities is a case in point. And, as in all markets, issues of the degree of regulation, or lack thereof, will rise in prominence.

Knowledge, in the form of informational commodity indispensable to produce power, is already, and will continue to be a major factor in the worldwide competition for power and individual nation's development aspirations. It is conceivable that nations will one day struggle for access to and control of information as they battled in the past for control over territory and raw materials. This "marketization of knowledge" is bound to affect the privilege that nation states have enjoyed with respect to the production and distribution of learning. The idea that learning falls within the sole purview of the state will become increasingly outdated in the face of a new principle; that society exists and progresses only if the messages circulating within it are rich in information, easy to decode and readily accessible. Marketizing knowledge rests on the principle of communicational transparency and, within this formulation, any institution (the university of the state) which strives for control, will be perceived as a factor of opacity and "noise". Whether or not one agrees with the principle of the marketization of knowledge, does not alter the fact that the process is underway and will post significant issues for institutions and nations. One such issue concerns the nature of the information market itself well or should it be regulated and if so, according to what rules? Who, in fact, would establish the rules; If indeed that is even feasible?

Another related issue concerns the learner. In an ever widening and differentiating knowledge market, the establishment of conditions of portability becomes vital. For the learner, this need for portability exists on two levels. The first is the need within nations, and among nations, for access channels, through which learners can move to the generative sources of knowledge and gain non-punitive access to these. The second need is for legitimation mechanisms which will recognize the value of knowledge acquired by learners, regardless of the source from which it was derived.

A world of communicational transparency will lead inevitably to an educational context characterized by a "credit transparency". One can look forward, in this regard, to the emergence of a set of new supraordinate multilateral organizations and arrangements geared to facilitating mobility among students and pan-national accrediting.

Futurity

The future is not what it used to be. In education, one of the most future-focussed of all cultural activities, there was a time in which we educated the next generation for "it". Education, in other words, was a preparatory period in life in which people contemplated their futures and the skills and abilities needed to attain and maximize them. Not only was there a gap between the present and the future, but this gap also allowed for a period of rather prolonged, and unencumbered learning.

This concept of a sequential relationship between present and future is changing. Today, the future is seen as impinging upon and, indeed, becoming part of our concept of the present. In our collective consciousness, the idea that there exists a clear time gap between the present and future is dissipating leaving, in the wake, a sense of "future immediacy". The future and its associated challenges and alternatives, are seen as rushing towards us, rather than the reverse, forcing people to continually choose now. For this reason, all nations are feverishly attempting to prepare their people "here and now" for the future, which they see as "here and now".

Not only has our perception of the temporal relationship between the present and future changed, but, so too, has our image of the future itself. Historically, various societies have defined the future through a range of alternative metaphors: (1) as a point in time-a time yet to be; (2) as a challenge to the collective wit, or spirituality of humanity; (3) as a destination-a place, event or a permanent consequence; (4) as an answer in the sense of the phrase that "only time will tell". (5) or as a judgement-the ultimate day of reckoning.[15] These images of the future are grounded in a substantive quality expressed as a direction, resolution or final state of being.

As we approach the millennium, the emerging view of the future is radically different. In this view, the future is conceived as a process of on-going change defined apart from any particular substantive dimension. The challenge emanating from this sense of future immediacy is seen as designing and matching the adaptive processes of a society and economy to the unfolding change processes of the future.

Leaders and policy makers, in all societies today, are constantly involved, in this regard, in assessing the future preparedness of their nations.[16]. Put another way, all nations, as a point in their policy map, are and will give increasing attention to the degree to which their societies evidence futurity, the adaptive capacity to interpret and respond to the change processes of the future.

Higher education, for its part, is frequently defined as a critical context out of and in which a nation will forge its futurity ethos and capability. Initial efforts in this quest were linked to forecasting specific labour market and other coping skills and retroactively programming their development through the curriculum. This response has largely failed, since it ignores the change processes which are operative after the initial forecast and following the curricular change.

More recently, policy makers are attempting to come to grips with the design of learning systems which are recurrent, integrated and based upon life long learning principles. If the future is defined as a change process, then it follows that people will have to be armed with on-going opportunities to define, understand and make informed choices about change. Higher education, caught as it is in substantive and time-gap models of the future and its relationship to the present, will inevitably become a major battleground in debates about national futurity.

The Empowered Learner

The second point in the education options triangle, is the rise of the empowered learner. The phenomenon, reflecting a new personal ideal, is attributable to a host of factors: (1) the politics of rights and participation, (2) the global information revolution, (3) the expansion of educational opportunity, (4) the economic imperative of knowledge, (5) new approaches to work, (6) the need for and processes of life-long learning.[17]

In the space available, it is not possible to explore each of the above factors fully. One-factor, though, is deserving of explication, since it is of uniform significance to most nations. This factor is the rowing need for systems and processes of lifelong learning.

While learning has become a lifelong necessity, there remains a basic incongruence between that reality and the public and institutional policies within education. In today's world the phrase "lifelong learning" is used as a rationale for changes which encompass a wide spectrum of reform proposals. The phrase is used with such off-handed ease, moreover, that it is my sense that we have lulled ourselves into believing that it is a living reality within our institutions. But is it?

The concept of lifelong learning was legitimated and injected into public consciousness through a 1972 UNESCO report entitled Learning To Be[18]. The very fact that such a report could be produced was revolutionary itself and provides a useful commentary on our times. Representatives from several nations formed the commission: France, Chile, Syria, Peoples' Republic of the Congo, USSR, Iran, and the USA. If one reflects somewhat upon the political events which followed, this mix of nations is truly remarkable. Indeed, this report may have been the last major effort in which the two superpowers collaborated and agreed. It symbolized, if a modern term can be used educational "glasnost".

In re-reading the report, it is evident that the commission had a very clear idea of what was meant by the concept of lifelong learning. This concept embodied six strategic principles:

(1) That dimensions of living experience must be restored to education by redistributing teaching in space and time.
(2) That education should be dispersed and acquired through a multiplicity of means-the important thing is not the path an individual has followed, but what he has learned or acquired.

(3) That the concept of a general education must be broadened so that it definitely includes general socio-economic, technical and practical knowledge.

(4) That educational action to prepare for work and active life should aim less at training people to practice a given trade or profession than at equipping them to adapt themselves to a variety of jobs,at developing their capacities continuously.

(5) That lifelong education, in the full sense of the term, means that business and industrial firms will have extensive educational functions.

(6) That access to different types of education and professional employment should depend only on each individual's knowledge, capacities and aptitudes and should not be a consequence of ranking or below experience gained during the practice of work.

If taken seriously, the concept of lifelong learning is a revolutionary idea, perhaps the only significant educational idea of this country. Those who advocate it are arguing in favour of the implementation, on a systems basis, of a number of subsidiary ideas: - accessibility, institutional openness, needs-based learning, competency-based education, co-operative education, mastery learning, paid educational leave, and credit for prior learning.

To talk earnestly about developing educational institutions as centres for lifelong learning, then, is to urge change of a most fundamental order. Given the hypothesis, suggested by Clark, that the primary imperative of any institution is to control rather than liberate those within, it may be a false hope to assume that any institution per se can be founded upon lifelong learning principles.[19] But a learning system can, since it has a range and impact greater than the sum of its parts.

In this context, then, what we are experiencing today is a pressure against the internal and external boundaries of our formal learning system brought about, not by creating educational or policy thinking, but by the aspirations and actions of people themselves. If this pressure continues, as I believe it will, then one can argue that we shall witness either an accommodation within or a basic reconfiguration of our learning system. The shape, structure and degree of openness of our learning system not, as many argue, the financing of it, will be the policy issue of the future. This is so, since answering the former question inevitably begs an answer to the latter. To date, leaders in higher education have focussed upon the level of financing without realizing that this has energized an even more intriguing feedback loop: financing what?

The concept of lifelong learning, and the acceleration in the rhetoric in support of it, has affected both the expectations and behaviour of people. Increasingly, people expect that they will be learning throughout their lives. Indeed, for many, they expect that they will be "learning a living". In some societies, this expectation has been transformed into a sense of entitlement: that is, lifelong learning is seen, not only as preferable, but is also considered to be a right which should accompany national citizenship. Just as people receive salaries, they now want learning entitlements.

This shift from expectation to entitlement poses critical issues of financing, access and equity for Government and employers. Moreover, the time gap in this shift from expectation to entitlement has narrowed rapidly. Co-terminous with what has been referred to as a rising revolution in expectation around the globe has been an equally dramatic demand for learning entitlements. The right to learn now exists alongside the right to work and earn as goals of personal and national development.

Societies, particularly in the so-called developed world, are entering the age of the empowered learner. Unlike earlier eras in which dependency characterized the relationship of the learner to knowledge acquisition, the new learner has available real choices and options as to what he/she wants to learn, where, when and how. Even more important, the empowered learner is aware of his/her new found freedom. This growing availability of choice, and the awareness of such choice in learning, provides the fuel for a major dynamic which is pressing for the development of a much needed new design for education.

The Emerging Networked Context

One start reality faces all nations of the world in these waning years of the twentieth century global interdependence. All nations, in order to both preserve their independence and growth, will increasingly have to locate themselves within an economy which is global in its span and mode of operation. At the same time, the world ecosystem, and its fragility, makes all nations, by definition, integral to and dependent upon a planetary whole. This dual interaction between the economy and ecology of the world has been recognized clearly, in the Brundtland Report, through the concept of sustainable development.[20] This concept centers on the satisfaction of human needs in a way which does not foreclose on either future generations on the long-term sustainability of our common ecosystem. It is growth with a purpose.

Both national self interest and ecological sanity require that all nations today think globally. Add to this the fact that information networks had new technology now make it possible to communicate globally, and the basis of necessity and possibility for an interdependent world has arrived.

Interdependence, from a theoretical point of view, links two key concepts: (1) First, the part must be strong in order that it can link to other parts and the whole, (2) Second, the part must be designed so that it is open and can be linked. From an educational point of view, then global interdependence faces policy makers with two complimentary tasks. The first is the need to strengthen national educational systems, but to do so, secondly, in a way which enables them to network to the largest world. Increasingly, all Government will face the issue of designing learning systems for a borderless world, one in which the place of knowledge and information is all-pervasive and, to a degree, uncontrollable.

On a political map, the boundaries between countries are as clear as ever. Put on an economic map, a map showing the real flow of financial and industrial activity, however, those boundaries have largely disappeared. What has eaten them away is the persistent ever speedier flow of information-information that governments previously monopolized. In the past, as well, there were gross inefficiencies in the flow of information around the world. New technologies are also eliminating these inefficiencies.

Through this flow of information, we are becoming global citizens, we have emerging global needs which lead to global products. As in the case of business, educators are coming to recognize that the universal flow of information puts a premium on learning how to develop strategies and systems capable of meeting the learning requirements of a borderless world. The beginnings of a globalization of learning are before us, and from this, flows a new educational need - the need to interact on learning highways across borders.

Learning networks, rather than institutions, will provide the educational bridge to future. All nations, in future, will have to design their educational systems in such a way that they, not only have internal coherence, but also have an open architecture - that is they can network with other educational and learning systems.

In Europe the Delta project of the EEC is precisely such a system, linking as it does national learning systems to a regional trans-European learning system. In Asia similar developments are underway. And within the Commonwealth, there has emerged a new transnational learning network - the Commonwealth of Learning. Inherent in the very process of globalization of economic activity, there, is a push factor for educational change. This becomes starkly clear when one realizes that to constitute education as primarily a function of the national state is fundamentally different than to define it as part of pan - national learning networks.

A basic pattern of change is becoming clear : not only are learners becoming empowered, but, so too, the fluidity in the context of learning is reinforcing this empowerment in such a way that conventional approaches to education are increasingly lagging behind cultural, social and economic dynamics. It is at these points in time that revolutionary and quantum leaps are not only desirable, but possible. We are at such a time.

A New Educational Design

The simultaneous challenges posed by the elements in a nation's policy map, in the face of an empowered learner and a networked and global context, are impelling most societies towards active consideration of a new educational design. That design process must account for four factors which flow from the dynamics of the policy options triangle :

(1) The educational design must address the issues in a nation's policy map. It must provide a basis for a configuration.

(2) The educational design must accommodate the autonomous, self-reliant and customized demands of an emergent and increasingly empowered learner.

(3) The educational design must, in janus-like fashion, turn inward towards national capability and outward preparing citizens and the society to function effectively in a globally interdependent world. The complimentarity of opposites must be its watchword.

(4) The educational design must improve the capabilities, life chances and self-reliant capacities of individuals and the learning capacities of societies and their organizations.

This quest for a new design for education is currently underway n a rapidly growing fashion throughout the world. Not since the rise of basic schooling, has the world witnessed such a phenomenon. Unlike the development of basic schooling, these new designs for education are being forged in a global context of mutual awareness, information sharing and technology transfer. For this reason alone, this development is potentially revolutionary in its nature and impact. We are, perhaps, the first generation in history to be consciously aware of such possibilities for global change, in higher education.

Adaptive Learning Systems

The cumulative impact of these new approaches to the provision of learning has led to a new concept of the design of learning itself, one which I call an adaptive learning system. The innovation in these new adaptive learning systems centres not on the content transmitted, but in the processes used to transmit the content and the purposes directing such systems. An adaptive learning system is a learner - centered knowledge and information system designed to improve access to learning and the life chance of people as way of anticipating, responding to and creating change on an individual and societal level.

Evidence of this movement toward adaptive learning systems can be found in a number of emergent educational developments : the global growth of distance education institutions and systems, the rise of computer- managed and computer-assisted learning in both public and private sector environments, new, powerful, portable and condensed technologies for the storage of information: the development of national and international satellite networks for information exchange and education; the application of expert systems in the learning process; the establishment of such new integrated electronic highways as ISDN; and the entry into the educational market place or private sector based training and educational institutions and systems.[21].

These, and other developments, are exemplars, not of complete adaptive learning systems, but of the key components of such systems. The parts of adaptive learning systems, in other words, are being designed and put into place today. The challenge, in the near future, will be to integrate these parts into a complete adaptive learning system. This is a meta-challenge which will call for a new design for education. This new framework, as the present paper hopes to outline, will be founded upon a holistic educational principle which incorporates possibility, flexibility, feasibility and desirability.

Adaptive learning systems are characterized by the presence o five features. They are : learner-centered; open systems; change focussed; technologically-mediated and value-based. The uniqueness o adaptive learning systems does not rest in the presence of any single feature, since these single elements can be found in various educational institutions (eg. many early childhood programmes are learner-centered), but in the cumulative impact of the integration of these features in one system.

Learner Centered

Not only are adaptive learning systems learner-centered, but they also reflect a newly emerging view of the learner. indeed, this combination of learner-centeredness with a new view of learning gives these systems their truly unique character. Learning in adaptive learning systems is seen as an active process in which the learner constructs knowledge as well as receiving it and, in the process, learns about learning.[23] The curriculum, not only reflects disciplinary knowledge into which the learner is inducted, but also is built upon the life experience of learners and social and economic issues facing a society. Within adaptive learning systems, there is no single mode of representing knowledge which is applicable to all learners in all contexts.[24] Hence a major goal in adaptive learning systems is to facilitate and develop fluency in the various modes of representing knowledge. The ultimate learning goal of adaptive learning systems is mental self management, which itself reflects a new and enlarged view of competence; the capacity to adapt to, select and shape environments.

Adaptive learning systems, unlike conventional approaches to education, rest on a view of learning which necessitates that the learner be taken seriously. In so doing, these systems face squarely challenges in design and implementation which go to the heart of such issues as how people come to know and understand. Given that many of these systems do not allow for regular corrections, through prolonged face to face encounter, these challenges and issues are inevitably debated publicly and self consciously.

Most adaptive learning systems are exposed systems, that is, they are open to public and peer evaluation; there is no classroom door to hide behind. For this reason, exponents of these systems have no choice in their willingness to articulate a vision of the learner and learning; nor to some extent of the society in which they exist. Their very existence will continue to provoke debate within education. Indeed, this is one of the latent functions of adaptive learning systems and should inform anyone's decision to become involved in their further development.

Open Systems

Adaptive learning systems, as the name implies, are systems of learning as opposed to institutions. As such, they demand a mode of thinking, a perspective on their role and function, which is quite distinct from that engendered in educational institutions.[25]

Adaptive learning systems, particularly when cast within the larger concept of open-learning systems, are ideally suited to planning and management within a systems perspective. These enterprises can be seen as parts of a larger learning system: the varied processes through which people acquire knowledge, values and skills on a formal, non-formal and informal basis. The meaning and function of adaptive learning systems, as a result, derives from the pattern and processes of the larger learning system and its interrelationship to it as other parts, it follows that these systems are best construed, in the words of Arthur Koestler, as "a whole part of a whole".

Within such a systems perspective, a primary goal is to contribute in the larger learning system and to consciously build interrelationships and connections to it. The more interconnected adaptive learning systems are, the more effective they are. Their identity and legitimacy, within a systems perspective, derives not from isolation and uniqueness, but from relationship and a linkage to the community of learners. A clear implication of this is the need to balance an analytical focus with its own nature and role-the part, if you like, with a broader focus on the learning system of which it is a part. This focus, rather than normative, in essence begins with it a simple descriptive question. What and how are people learning and what affects that process? An answer to this question should provide the appropriate context in which to locate an adaptive learning system and provide a sense of cultural meaning to the enterprise. Adaptive learning systems must maintain fluid boundaries and be open to the society at large. Without such openness they, rather than being facilitative vehicles, can potentially emerge as yet another institutional barrier to learning.

Adaptive learning systems challenge substantially conventional approaches to the management of educational enterprises. They require what might be called an ecological perspective on management in which relational and functional dynamics are the most critical. Adaptive learning systems must be designed and managed in such a way that their parts fit each other so as to work together harmoniously, as well as efficiently and effectively. They must be managed with a keen eye toward the circulation of information as well as its destination.

Blockages to information flow, in adaptive learning systems, generate the organizational equivalent of systems sclerosis. Such a view means the managers, within adaptive learning systems, must constantly guard against creeping myopia in their perspective. The early warning signal of the onset of this disease is evident when one begins to believe in and act on the following principle.

> If each part of an adaptive learning system, considered separately, is made to operate as efficiently as possible, the system as a whole will operate as effectively as possible.

Change Focus

Adaptive learning systems are designed and funded, in most cases, as instruments of social change and development. They carry with them egalitarian and efficiency mandates to alter the existing pattern of access to learning and opportunity. Frequently, these mandates have a clear expectation that "results" will be achieved at "lower costs".

Unlike conventional models of education, adaptive learning systems function in an environment in which clear policy expectations exist and equally clear results are expected. Participatory, success and cost benchmarks inform the evaluation of such learning system. This is both the bane and blessing of their existence.

Cost-effectiveness

Adaptive learning systems, particularly distance education, are considered by many to be a cost-effective alternative to conventional modes of providing education. This statement is often made by those involved in distance education, but a closer examination of the question, reveals a complexity which, if not fully grasped, can lead neophyte distance education systems into financial wasteland.

To illustrate this complexity, I want to outline briefly two modes of cost analysis which are critical in distance education: comparative and systemic. By comparative analysis, I mean answering the perennial question of whether distance education is more cost-effective than conventional education. As for all such questions, the initial answer is that it depends. In this case, it depends upon whether the objective, in using distance learning techniques, is to overcome geographic or social distance.

If the objective is to overcome geographic distance, that is to deliver education to people geographically removed from a central point and who are sparcely distributed within that space, then distance education is unquestionably more cost effective. This is particularly so if one holds constant the core delivery model of conventional education and costs its extension through space. If one adds the variable of flexible time, then the cost differences increasingly favour distance education.

If one changes the delivery model of conventional education, then, of course, the analysis will yield different results. In changing the delivery model of conventional education, though one would, I would argue, be moving toward the delivery principles of distance education and this movement would, by definition, negate the need for the analysis per se.

Consider now the problem of overcoming the social distance. By social distance, I mean the gap between a person or group's current life situation and their expectations. Many people are socially distant from accessing education. This social distance is created by cultural, academic, value, work, and the life style factors. The native people of Canada, for example, are socially distant from education and their relatively low participation and success rates stand as evidence of this.

How does distance education fair as a means of cost-effectively overcoming social distance? This is, I believe, one of the most challenging questions facing distance education. There are at least five variables which are of importance in assessing this question. These are. (1) learning style; (2) social support; (3) academic readiness; (4) learning content, and (5) culture.

Distance education, at its current stage of development, assumes a learning style which is self-directed; a social support situation which is flexible and positive, an academic readiness which includes, particularly, facility with the printed word; a learning context which is variable and a situation in which culture is presumed to be a neutral factor. If a person or group has a self-directed learning style, a positive social support network, a reasonably high degree of reading ability and learning contexts which allows for study, then distance education is a cost effective means of overcoming social distance. To the degree to which these factors are not present, then to that degree distance education systems must design for them, which is itself an increase in cost.

These same factors, however, are at play in conventional education with the exception that conventional education can provide, should it choose, a learning setting which integrates all the five factors. In this regard, distance education systems are exploring two strategies, a way of increasing their ability to overcome social distance: the use of telecomputing technologies to enhance interactive learning and mixed modes of delivery involving a combination of face-to-face, community-based teaching and self-directed learning. Technology-based interactive learning system, within a mixed delivery mode, at this point requires experimentation and testing, but do seem to provide a cost-effective avenue through which to overcome social distance.

By considering cost within a public policy context, then, the critical issue facing distance education is not its costs per se, or costs *vs* comparison to other modes of education, but the relative costs of providing and increasing access to and success in education. In this context, social as well as financial benefits must be part of the bottom line.

Affordable Access

Adaptive learning systems are increasingly governed by a mandate to provide affordable access to higher education. This mandate typically encompasses the following subsidiary participation goals:

* Increased Participation
* Broadened Base of Participation
* Targeted Participation
* Successful Participation

Increased Participation

Adaptive learning systems are perceived in many nations as a vehicle to increase the volume of participation in learning in society. This represents a quantitative objective which speaks to the absolute numbers of people who have access to or participate in learning. These systems have been remarkably successful in achieving such quantitative goals and have accomplished them using a variety of means. If quantity alone were the sole criterion of success, then adaptive learning systems have been resoundingly successful.

Broadened Participation

Broadened participation means opening up access opportunities for people who are geographically remote from centers of learning or culturally and economically distant from the mainstream of society and opportunity. Adaptive learning systems have been reasonably successful in overcoming spatial barriers to learning. This has been accomplished, particularly in recent years, through the utilization of regional centres and tele-computing technology.

The record of adaptive learning systems in broadening the social basis of participation is less stellar. By and large, the same groups who participate in formal schooling, participate in adaptive learning systems. Two factors help to explain this. First, to date, most adaptive learning systems assume the very skill which people, with low participation rates, do not possess. Since most systems are print-based, for example, high literacy skills are usually required to learn. New CAL and other technologically mediated forms of learning, however, offer great promise in this domain.

Secondly, most research on adaptive learning systems, suggests that non-academic factor play a significant role in determining participation. Attitudes towards one's competence, family circumstances, work styles, previous educational experiences, financial situation, time management skills, experiences of discrimination and prejudice- these, and a host of other non-academic factors, intrude between a person and his/her desire to access a learning opportunity, even when that opportunity is readily available.

In meeting the challenge of broadening the social basis of participation, then, adaptive learning systems must forge closer linkages with the social and economic context facing learners. Until recently, these systems have not formulated, in any conscious way, an image of human development unfolding within the context of the environment. This pattern exists, despite the fact that substantial cross-cultural research exists to document how socio-cultural environments shape human development. This research shows, among other things, that patterns of thought develop differently in different cultural contexts[26]. The very role of cultural experience in shaping cognitive patterns, however, has been repeatedly confused with human capacity.

Successful Participation

Until recently, most adaptive learning systems have focussed their efforts on increasing access to learning. This focus is understandable, since the concept of access has been traditionally linked to the idea of equality of opportunity. Policy makers, for instance, have tended to believe that the goal of educational equity is attained when the conditions exist in which no person is denied access to higher education because of race, income, social status or place or residence.

This concentration on access has resulted in a front-end and input-focus in programme and systems design. Removing barriers access, be they of time, space or life circumstance, for example, has been the abiding concern of distance education. Flexible registration procedures, the use of communication technologies, regional centres, tutorial support systems, and educational counselling service has all been used to remove access barriers and, judging by growing participation rates, they have achieved a good deal of success.

Equalizing access, however, does not necessarily equalize the chances of success for learners. The barriers which block a person's access are not those which prevent success following admission. Access barriers also relate to these factors but, as argued by Jencks and Astin, also encompass such variables as preferred learning style, cultural assumptions within curricula, the labelling process, and power relationships.[27] An adaptive learning system which is geared, not only to increasing access, but also to altering the social pattern of its outcomes, must confront squarely the barriers to success. Equality of opportunity, in other words, must be linked to equality of results. Most importantly, this linkage must be forged in ways which recognizes what Amy Guttman postulates as the twin principles underpinning a just approach to education: non-discrimination and non-repression.[28].

A concept of equality in education, which is not tied to the developmental capacities of a person and to the socio-cultural context in which these are expressed, is ultimately a mask shielding the fact that bias is the operative principle. The function of such concepts of quality is not education - that is; the development of the talents of those who participate - but exclusion, selection and tracking.

Targeted Participation

Targeted participation entails a focussed approach to increasing the participation of selected groups in learning, or achieving a broader range of participation in and achievement of specific learning goals. Adaptive learning systems have been used, on a selected group basis, to increase the participation of women and minorities in learning. These programmes, when successful, have typically provided specialized recruitment, on-going counselling, modified curricula, front-end learning skills, and focussed financial supports. They tend, as well, to be more staff intensive and involve collaborative models of programme development. Even when successful, though, such programmes often face egalitarian inspired arguments concerning the differential treatment of specific groups in the context of an ideology of universal service.

Adaptive learning systems have also been used to involve various people in selected learning goals. Literacy and employee training provide two examples. Broadcast media have been quite successful in constructively attacking such problems as literacy. The individualistic native in this learning environment has been able to overcome somewhat the stigma of illiteracy and group evaluation.

An increasing number of companies are developing in-house adaptive learning systems to achieve their training goals. These systems are gaining in prominence, since they deal simultaneously with a number of issues in the corporative training environment:

(1) Timeliness - training provided when needed;
(2) Customization - training designed for the specific needs of a specific firm;
(3) Adaptability - training that can be modified as circumstances change;
(4) Cost - training which is taken to the learner in a cost-effective manner;
(5) Scale - training that can cope with large and dispersed numbers of people;
(6) Flexibility - training that allows for a variety of learning modes and styles.

Adaptive learning systems, whether functioning in a public, voluntary or private sector context, reflect and induce change in societies in which they exist. Their change impact is at two levels. First, they provide a means to accommodate the processes of life long learning within existing learning systems. That is, they offer a flexible option parallel to conventional educational institutions and one more attuned to an empowered learner. To date, this has been the predominant role of adaptive learning systems.

There is, however, a second, and more fundamental change impact of adaptive learning systems on the horizon. This impact involves not only first order change, that is change within the existing learning system, but also second order change, change of the learning system.[29] This potential for second order change flows in part, from the natural affinity of and increasing linkage of new information technologies to adaptive learning systems. It is to this possibility that we now turn.

Technological Mediation

It is difficult to imagine a discussion of education in the waning decades of the twentieth century which does not stumble over, or face squarely, questions posed by the rapid development of new information technologies. Adaptive learning systems share, with these new technologies, a quest to find new ways to mediate the relationship between a person and experience. Of all areas of education, adaptive learning systems are most intimately intertwined with technological development and, for that reason, face issues which are at the forefront of these developments.

In adaptive learning systems today new information technologies are employed at three levels: as a tool in the learning process; as an aid to the learning process and as the medium of the learning process.

IT As Tool

Using computers and other forms of IT as an object of the learning process represents their development as tools. Until recently, this was the dominant use of IT in education. In essence, this has involved the study of a computer, as an information processing machine and the training of people in how to use it.[30]

While initially an obsession with the variation in hardware, this approach has now shifted to the soft-side. Students are introduced to programming languages, operating systems, and increasingly, are taught the skills for the adaptation of these tools to their unique needs. The assumption in these efforts has been that, since computers were becoming universal, everyone should know about them and how to use them.

This logic led to substantial investments in such efforts. As computers become increasingly user-friendly, however, the need to learn how to use them will dissipate somewhat as the need to understand the internal workings of a telephone has, in order to make a call. The only area of continuing need may be as in driver education, for safety and security reasons.

IT as Aid

Using IT as components of the learning process represents the use of technology as an aid. By and large,most development of IT in adaptive learning systems are at this level today.

It as an aid to learning generally has been used on three levels: (1) data and wordprocessing: (2) content modules; (3) intelligence extenders.[31]

More recent developments have involved the use of computers as intelligence extenders. These "congnitive technologies", or "workbenches", make qualitatively easier the specific mental activities involved in complex tasks, such as collecting data, crafting ideas, writing, and designing and running experiments. What these applications have in common is to make more accessible, with less mental effort, the achievement of what are considered to be complex acts of mind. Unlike so called machines that think, these intelligence extenders enable students to better express and build upon their own creativity and intelligence.

IT as a Medium

Using computers and integrated interactive systems as the actual ambient of learning represents their deployment as the medium of learning. Three levels of application can currently be seen in adaptive learning systems. The first, involves the translation of textual course material into a computer format with remedial and branching enhancements. This form of computer based learning offers individualized study, instant evaluative feedback, depth learning and remediation. The key is that these are provided in an integrated format, with access being tailored to a person's stage in learning.

A second level of application is in what is known as context based learning. Through the use of micro worlds, students are provided with dynamic computer models of systems or parts of systems which can be studied without the support of an instructor. Such modes of learning have been described as discovery worlds. Unlike earlier simulations, though, these discovery worlds allow students to change the properties of the system or to construct their own. This represents, through the use of IT, the concept of the active learner constructing knowledge.

Apart from micro worlds, most technologies in education are print based. The so-called text reading eye has been the primary sensory channel in the learning process. This has resulted in a radical impoverishment, given the senses available from which learning takes place in the world.

This state of affairs will change in the near future. Dramatic developments in the consumer electronics, telecommunicating and electronic publishing industries are rapidly making available low cost, high quality and high volume editing and storage technologies for high speed access to high quality still and full motion imagery. These developments will make possible the development of dynamic, interactive, multimedia learning environments that can access vast archives of text, image and sound for educational purposes. Given these developments, and the need for multi-media literacy which flows from them, it is safe to say that our whole concept of what is possible in the range and mode of learning will have to be re-thought.[32]

As the use of new technologies in adaptive learning systems move from tool, through aid to medium of learning, the tendencies of these technologies to structure experience for the learner emerges as an important question. All technologies, print included, do this. We know something about how electronic communication systems and their supporting conceptual apparatus structure learning.[33] We know one thing from the history of print; it can and has been used for control or empowerment. Given that technological development appears to create its own momentum, adaptive learning systems must inevitably debate, within that context, the organizing principle for its use; to control or empower people.

Recurrency

It is impossible to discuss educational policy today apart from economic, social, technological and cultural issues and policies. All dimensions of national and social activity interrelate with and interpenetrate each other. Educational policies, it follows, must be constructed within a global policy package including labour market and social policies combined with economic and technological restructuring. In the development or such a global approach to policy, a mutuality capacity must exist between and among all sectors. For education, this means that the lock-step, sequential ladder of learning, based upon a segmented and ordered concept of life stages, must be re-thought.

Adaptive Learning Systems are designed to be recurrent. They facilitate alternating periods of education, work and leisure throughout one's life-time. Adaptive learning systems allow for the creation of a flexible post-compulsory learning system which integrates existing types of education into one whole.

The recurrent dimension of adaptive learning systems are reflective in four attributes. Firstly, adaptive learning systems are able to receive people from all age groups. This maximises both private and social rates of return. Secondly, adaptive learning systems provide an integrated education system. They facilitate, though credit co-ordination and networking, an individual's ability to travel on alternative paths toward the same educational goal. Thirdly, adaptive learning systems offer education unit of variable and flexible duration which serve as building blocks towards degrees and diplomas. These building blocks stress mastery in learning rather than time in learning. Lastly, adaptive learning systems allow for multiple entry and exit points on a continuous basis. This avoids the all or nothing trap while structuring education on a need and desire to know basis.

One of the dangers confronting individuals and nations, as they face a future of rapid and often unanticipated change, is a premature foreclosure on choices and opportunity. All of us, as we swim in the stream of life, require calm waters which allow for second thoughts and reflection. If experience has any value, it must be interpreted, continuously reconstructed and tested through action and analysis. If formal learning is to assist in this process of experiential reconstruction, then this concept denies the competitive ethos of life. This can be true. On the other hand, it is congruent with life as it is lived.

Improving Life Chances

All educational models and institutions are value-based : they represent a concept of a desired state of society and preferred life.[33] Adaptive learning systems are no exception. In fact their linkage to public policy objectives often makes this value orientation even more explicit.

An adaptive learning system provides a flexible and responsive design for learning. This alone is a major departure in higher education. But any system can be dedicated to the wrong ends. Uniqueness, in other words, should not be equated with worthwhileness. What purposes should guide the development and use of adaptive learning systems?

Human welfare is the ultimate guide for all activity-education included. Within this general notion, adaptive learning systems should focus primarily on improving the life chances of people by developing their capabilities and self-reliant capacities. This human-centered ideal, contrary to the recent tendency to define education as a consumption factor or social utility, is a balanced one, encompassing personal, cultural and economic objectives.

Human beings are the ultimate productive resource. On a micro-level, for example, X-efficiency theory has focussed on the effectiveness/ uneffectiveness on the use of inputs to firms[34]. The actual activities that employees carry out, despite their abilities, depends to a degree on choices that they and those of others with whom they work. Most, if not all jobs, require interpretation. Perfect control is a myth. The employee is free to choose the effort level at which he/she works. Motivation and job interpretation, moreover, cannot be purchased in the market, but is a function of the organizational context of work and learning. Adaptive learning systems, which focus on building capabilities and self-reliance, provide a motivational and interpretational base for human productivity and creativity.

On a macro level, it is human beings who confer value on things and also make their production possible. The human element and investment in it, in fact, covers the whole of economic activity. The human factor is the only element in any nation's development which is, at the same time, the final end and means of development. As such it is not comparable to other elements which are just means. It is both the starting and finishing point for any educational consideration which hopes to contribute to development.

To the extent to which a given society can provide learning systems which facilitate the development of all its people, then, to that extent, that society will continuously develop. Any other approach will inevitably convert a learning system, given their unique ability to improve life chances, offer the world a rare opportunity to create a holistic, rather than antagonistic relationship between learning and development.

The development of life chances and their distribution tend to evolve through three linked historical processes. The emergence of a new life chance is a genuine innovation, like a technological invention. In education, the development, of compulsory, public education was such an innovation, for it made available to citizens, as an entitlement, the opportunity to engage in formal learning. Many countries in the Third World are still struggling to implant this life chance.

The enhancement of an existing life chance is incremental process. It involves the refinement and re-structuring the prototype. The development of secondary schools and colleges are cases in point, as are those efforts to the broadened base of curricula. The Third World's focus on curriculum innovation, particularly in the vocational and technical areas, is current evidence of this stage. The extension of life chances involves making the chances, which have been developed, available to more people. The expansion of schooling, on a global level, is an example of the extension principle as are efforts to increase accessibility to higher education.

Where do adaptive learning systems currently stand in relation to these life chance principles. At their current stage of development and conceptualization adaptive learning systems do not signal the exergence of new life chances, although the potential for such a development exists.

To date, the focus of adaptive learning systems has been on the extension and enhancement of life chances as they are currently structured. Most of these systems, have extended existing life chances to a broader range of people.. This has led to a concentration on the enabling of learning; that is providing the conditions for it to own the first place. The central policy and educational issue in this endeavour has been access and the blockages to that. Issues of substance, access to what and why (for what purpose), have played a minor role or have played a minor role or have been taken for granted as a good.

Recently, there are signs that some adaptive learning systems are moving to the level of enhancement of life chances. The print-based, correspondence prototype of distance education, for example, is currently being-re-examined and enriched, particularly through the application of new tele-communications technology. This has led to a focus on the development of learning, the provision of conditions under which learning can not only be acquired, but broadened, applied and made more effective. Process and design issues, as a result, have emerged as of central importance. Much of the development dialogue today in distance education is between nations involved in the extension and enhancement levels and the so-called problems of "transfer".

The growing imbalances in wealth, technology, trade, health and other factors between the developed and developing world, all of which are occurring in an increasingly inter-dependent planetary context, however, call for the development of new life chances. Adaptive learning systems to the truly relevant in this globalized environment has the opportunity and potential to do just that to create new life chances.

Adaptive learning systems, if they are to improve life chances on a global scale, must be recast within a global and culturally ecological framework in which the possibility is offered of forging new options and social linkages. This shift in paradigm will force discussions and research to center on the enabling and development of learning and their associated access, process and design issues. It will also require a broadening of that discussion to include the empowering of learning; providing the circumstances and contexts in which people are in a position to develop their capacities as they choose. Empowered learners are empowered citizens. Empowered learners are also empowered workers and managers. Empowered learners, in other word, produce an empowered society, one which is, by definition, involved continuously in the creation of its own destiny. Cast in this context, adaptive learning systems offer the opportunity, for both developed and developing nations, to transcend those boundaries of time, space, competence and social position which have historically limited life chances. The emergency of adaptive learning systems symbolize a larger process of social transformation in which the mobilizing power of the creation and re-creation of knowledge and its continuous and ubiquitous sharing is the major dynamic. This portends a world bound only by human potential. This not a world worth struggling to realize.

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Whither Educational Policy, 1986?

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Introduction

Why did the educational policy of 1986 fail?

It is a difficult question. Yet the policy formulators are to be congratulated for the bold and innovative direction they were trying to offer for higher education. Visions cannot be fully implemented. However that the policy formulators dreamt of a vision for a reorienting higher education in the country is itself something to be proud of. Their concerns and determination to radically transform higher education has not borne full fruit. This is fully understandable. Institutions cannot be changed overnight. The first step in bringing about change is creation of an awareness of the changing perspective. That the policy has done. At least at present there is a greater awareness that higher education cannot remain and will not remain the same as it was. The period of reflection that began in 1986 for innovation and change can lead into action in the coming decade.

Not that the policy had no limitations. The very first limitation of the document was the lack of a clear perspective for higher education. It is an acknowledged fact that higher education is used as an instrument of exploitation by its beneficiaries. In a country of massive poverty, illiteracy, superstitions and irrational beliefs the products of higher education, through the power of knowledge, have appropriated wealth and both economic and political power. It is equally true that higher education continues to be the monopoly of people from dominant castes and classes. How to transform and reorient a system that has a 'colonial heritage' and make it an instrument of power to the exploited and marginalised groups in society should have been the obsession of the policy framers. However since they were not clear about the central question in reorientation the framers looked at higher education in its deteriorating standards. detected reasons for it and suggested a few proposals.

The central question in the reorientation of higher education should have been - higher education for what and higher education for whom? Since the policy could not fully respond to these two questions it did not have a total grasp of the educational scenario. Higher education is a luxury in our country. If the few who benefit from these centres of learning do not utilise their knowledge for national building, the country does not require Universities. What exactly nation-building mean? An individual does not contribute to nation-building if he remains in India aftter a degree from a prestigious University in the country even when he has a chance to accumulate more wealth by going abroad. The tasks of nation-building entails attitudes of concern for the socio-economically marginalised groups in the country, a deep understanding of key issues that do not promote development and a determination to work against forces that oppress millions of our countrymen. In other words, concretely it would mean how could a policy for higher education prepare agents of change.

Preparing agents of change at least specifically was not the objective of the document. Both in its content and context the document of 1986 on education sounded too European with some pious references to the context of India here and there. Naturally, then the steps suggested to revamp higher education did not take into consideration the whole social system but limited itself to education programmes. The result is that not much has changed in higher education since the document in spite of the great expectations created by it. At the level of analysis the document accepted the naked truth that education is a sub-system and a sub-system functions in a system. Yet one fails to understand why the document did not propose departures from the existing highly bureaucratic and state controlled system to a system of community oriented and people centred higher education. The disease was well diagnosed. But the right medicine was not administered.

It will be the task of this paper to look holistically at the system of higher education in a total perspective and point out some of the limitations of the educational policy of 1986. In the first part of the paper an attempt will be made to put together some of the major causes detected by the policy of 1986 for the poor quality and quantity of higher education. The second part will highlight the limited perspective of the document and the various dechotomies in the policy. In the third part various reasons for the failure of the policy will be looked at. And finally the last part will be a plan of action towards a new policy.

Policy of 1986: Causes for the failure of higher education

"There is a widespread feeling that the present state of higher education is largely the result of the overt and covert interference by external agencies"[1] observes the document Challenge of Education: a policy perspective. In the chapter on ' an approach to educational reorientation', highlighting some of the constraints the policy remarks "Education like all other systems has a set of beneficiaries who would lose many of their special and unjustified privileges if the educational system is changed and its functioning is revamped to secure greater efficiency, equity and objectivity".[2] Who are those beneficiaries who do not permit the reorientation of education?

The following are identified as some of them

(i) Politicians and Political Parties: Political parties find their recruits to participate in demonstrations, protest marches, processions and elections from the Universities. Colleges and Universities have proved to be training grounds for political parties to train the young in the process of inducting them into political parties as active politicians. That is why though de-politicisation of campuses is a popular idea, political parties have not been willing to implement it. Several of the centres of higher education have practically become battle fields for political parties with divergent views, inciting violence on the issues of communalism and casteism to acquire political power. Hardly anything 'academic' takes place in these so called centres of higher learning.

(ii) Educational bureaucracy: Equally important group that is proving a hindrance to the implementation of any innovation is the State's bureaucracy. Indian bureaucracy has a colonial heritage. It strongly holds the view that 'old is gold' and what is of the past is very relevant to the present. Being accustomed to rules and regulations, there is a mindset in our bureaucrats in educational administration against change. If radical changes are brought about in higher education the bureaucracy is bound to lose much of its power that it has come to acquire through "patronage in the matter of recruitment, promotions, postings and transfers and centralised purchase of equipment and consumables".[3] Time that teachers and administrators should have spent on academic pursuits is at present spent on the doors of the bureaucrats waiting for approvals, promotions and umpteen other unnecessary chores.

Managements: Several managements run educational institutions without any expertise in education. Colleges have been sanctioned to many individuals and groups on caste and communal considerations. Politicians too have got into education business to create vote banks and further their influence in their constituencies. Colleges sanctioned purely on political considerations by the party in power cannot do serious academic work. If the very purpose of the establishment of these colleges is political how would they pursue the cause of education then? Besides providing vote banks, these colleges also spin money through capitation fees and donations. With no educational thought governing their minds and hearts, these managements have proved to be obstacles to educational change envisaged by the policy of 1986.

Teachers: "Should there be a change in the examination system, a lot of people will resent it because the system of private tuitions and coaching shops might become unnecessary and those who benefit from leakage of papers, preparation of keys and test papers etc., mass copying and other unethical practices will be put to a loss. On the other hand, this will mean much more correction of answer books, regular class work and innovative teaching involving considerable preparation."[4] "If rote learning of text books is replaced by innovative work and environment related teaching many teachers will find themselves in difficulties because they will have to adjust to new curricula for which they have not been prepared either by their original training for the job or by experience .... there is no social demand on a teacher for a high level of performance."[5]

With the type of teaching community that the Colleges and Universities have and with all those who have been appointed more on considerations other than academic, could the country expect them to be pioneers of new thought, generators of new ideas and trend setters? The teaching community has come to acquire certain interests that they are not willing to give up in the cause of education. There are technological, economic, legal, financial and other constraints of the total system of the Challenge of Education had identified. However these constraints can be overcome easily if proper measures are taken to de-politicise education and free higher education from the clutches of State bureaucracy. De-politicisation of education would not only free compuses from political violence, manipulations and rivalry; it would also create an environment of discouraging vested interest groups in involving themselves in educational activities. Is it possible? Unless and until there is a strong 'political will' to change the system it is not possible even if we have brilliant policy. The policy had not clearly mentioned how the policy framers would transform higher education from vested interest groups. Unless and until some hard decisions are arrived at to free education from the clutches of the State, inefficient managements and the lethargic and inefficient teachers, the system cannot be reformed.

Proposals for implementation in the Policy of 1986

After diagnosing the malady in the document on Challenge of Education that is affecting higher education, the following measures were proposed in the Programme of Action to provide dynamism to the higher education system:[6]

i. Consolidation and expansion of Institutions
ii. Development of Autonomous Colleges and Departments
iii. Redesigning courses
iv. Training of Teachers
v. Strengthening research
vi. Improvement in Efficiency
vii. Creation of structures for coordination at the State and National levels
viii. Mobility

In the ten years since the adoption of the Programme of Action these proposals have been implemented only partially so that there has not been much impact on the system of higher education. The governments both at the Centre and States have not been able to provide the minimum level of infrastructure for the maintenance of quality and standards. The so called steps UGC was committed to take in order to promote new, efficient and more effective managements systems in Universities and bodies have yet to be evolved. New institutions spring up overnight without minimum infrastructure and without provision of the necessary physical facilities. With politics being the determining factor for the affiliation of new colleges, nobody is serious about meeting the requirements of minimum facilities to start institutions.

As for autonomous colleges, except for very few States, the idea has remained a distant dream. There has been a vehement opposition to the very concept from state governments and the teaching community. And those autonomous colleges which have been permitted to be autonomous have so little freedom to frame curricula, and redesign courses that they strictly be called autonomous. In the state of Andhra Pradesh though autonomy is conferred on some colleges, the colleges have not been permitted to redesign the curricula. Only freedom the colleges have is the freedom to have their own system of evaluation. The State of Tamil Nadu has a longer history of autonomous colleges. And yet the creativity and originality that was expected from these colleges is yet to manifest itself. It was envisaged that about 500 colleges would be developed as autonomous colleges in the seventh plan. There may be just around 100 colleges that are autonomous. With the stron resistance to the idea of autonomous colleges from the vested interes groups and the state governments who do not want to part with thei power, the idea is still to materialise in a big way.

To get rid of the rigidity of courses the 'Programme of Action 1986 had proposed to secure full involvement of the Universities and facultie in redesigning and reorienting the courses in higher education. Redesigning courses to promote interdisciplinary programmes and inter-face with employment through autonomous colleges and autonomous departments has not succeeded. There have been no efforts to organise specially designed orientation programmes in teaching methodologies, pedagogy, education psychology etc. for all the new entrants at the level of lecturers. Since refresher courses have been linked with promotions in many Universities, teachers have been attending them reluctantly. Research is still done outside the University system. Colleges continue to function as teaching shops and research is still foreign to undergraduate colleges. There are only a few individuals who do some research in Universities. However the quality of research even in Universities leaves much to be desired. The State Councils of Higher Education envisaged by the 'Programme of Action' as statutory bodies have yet to be constituted in the majority of the States. In those States where these have been instituted, they have not been able to perform, the functions envisaged by the 'Programmes of Action 1986' because of rapid politicisation. Can a body of people who have political connections and who make it to the State Councils of Higher Education only on this strength plan and coordinate educational activities? These bodies function essentially as mouth pieces of the state governments. State Councils of Higher Education were meant to be the "effective machinery for planning and coordination of Higher Education at the State level and coordination of State level programmes with those of the UGC."[7]

The UGC has finally succeeded in setting up an Accreditation Council for Professional and Management Institutes. The general colleges are yet to be covered. Of course the UGC eligibility test for recruitment of lecturers is a welcome step in demanding certain standards of applicants for teaching. Even this measure has not been strictly followed by States. In several States, the state governments have been conducting their own eligibility tests, thus diluting standards.

What a pity that the document had no concrete strategies to check the growing tentacles of the State that has been responsible for the deterioration of standards. One expected the policy framers to propose models like I.I.T's, I.I.M's etc., where there is minimum State interference and the standards have always been comparable to the best in the world. 'Community Centered Colleges' with full participation of the people around them could have been another model. Reorientation cannot be done by the very same agency which has been responsible for the deterioration of standards. If the policy had put the whole programme of action with an independent body without State interference but with State support, the story of the universities would have been different.

Limited perspective of the policy

The understanding of the objectives of higher education were dichotomous in the policy. The policy on the one hand attributed functions to education which were beyond its capacity. "The country now stands on the threshold of the 21st century .... India is faced with challenges. Whether the country can face these internal as well as external challenges successfully will decide the quality of life of the citizens of tomorrow. Education is the most effective instrument to meet these challenges. Only education can imbue people with the knowledge, the sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation, capable of providing its people with the wherewithal for creating better, further and purposeful life."[8] Quoting the first Prime Minister the policy declared that 'if all is well with the Universities, all would be well with the nation."[9] The 1986 policy further held that "Education has an acculturating role. This requires sensitivities and perceptions that contribute to the cohesion, a scientific temper and independence of mind and spirit - thus furthering the goals of the socialism, secularism and democracy enshrined in the Constitution". The policy framers were of the view that higher education is the most important instrument or key to transform India into a dynamic, vibrant and cohesive nation.

With 48 percent of the nation still illiterate and higher education being at the service of a mere 4.8% of the relevant age group, it is no surprise that higher education has not realised the professed purpose for which it was meant at least for our planners and statesmen. Social position of the parents has determined the quality and quanity of higher education for their children. In spite of the Universities remaining an exclusive arena of State activity, the State has not been able to play a directive role in respect of them. Instead, the State has used higher education as the most important "ideological State appartus" in the hands of the dominant groups. The 1986 policy for higher education thus appeared as a product of conscious and deliberate political decisions to generate support for the ruling class. Had it been otherwise, the existence of widespread poverty and illiteracy should have curtailed the educational privilege of the rich specially at the level of higher education. A push should have been given to primary education. In spite of the tall claims about primary education, higher education has received more prominence ever since the policy of 1986. Those who were socio-economically privileged continue to be the major beneficiaries of the system. The value system of those passing out of the Universities continues to be based on individualism, elitism and lack of concern for the larger issues of the nation. Practically all those who attend colleges avail of higher education in order to climb the ladder of personal success instead of applying it for social good. Higher Education means better jobs and, as a result, better satisfaction of needs. The gulf between those who know and those who do not know has widened further. Knowledge has become a source of wealth and status. Those who know look down on those who do not know and exploit the illiterate masses. This is in spite of the grand objectives articulated by the policy about transforming India.

Challenge of Education: a policy perspective 1985, quoting the report of the Education Commission (1964-66) had observed "Quantitatively education can be organised to promote social justice or to retard it. History shows numerous instances where small social groups and elites have used education as a prerogative of their rule and as a tool for maintaining their hegemony and perpetuating the values upon which it has rested. On the other hand, there are cases in which a social and cultural revolution has been brought about in a system where equality of educational opportunities is provided and education is deliberately used to develop more and more potential talent and to harness it to the solution of national problems".[10]

The policy framers seem to have been aware of the dichotomous functions of higher education. The reason attributed to the non-fulfilment of the high objectives of education is the social system wherein the sub-system of higher education operates. "An education system does not operate in a vaccum. It is greatly influenced by the characterstics of the environment."[11] That in reality means the changes in the socio-economic power structures of society are the prime movers of educational changes. Did the policy then overestimate the potency of the educational engine as a vehicle of socio-economic reforms? What really has happened is that the prevailing power structures have strengthened themselves and have not permitted any change in the educational system contrary to their interests.

One can thus boldly say that the policy of 1986 has brought no radical changes both in the educational system and socio-economic and political power structures. What really happened? The policy framers were loyal to the State. They thought of their functions as formulators of a policy to inculcate loyalty to the State and create a class of people who would support the interests of the State rather than the values of the people. Naturally then the document spoke of goals the policy did not really mean.

What was expected from the policy framers was that if they really wanted higher education for social change to get into that small 'autonomous space' of the system in spite of State control, they should have broadened that zone to make higher education critical, community-oriented and people centred. Education enjoys a certain autonomy. It is not totally controlled by the State. Universities were meant to generate thought and reflection. How do we make the system work by putting the Universities in the forefront of reflection and action on critical issues like protection of environment, education for all, gender equality, human rights etc.? That did not become the preoccupation of the policy. If the policy had stressed on the involvement of the Universities with issues relating to the people rather than concerning themselves only with innovations to make people competent in skills, a new generation of students imbued with the spirit of human solidarity would have emerged in the last ten years.

Another area of failure is the lack of even an attempt to take higher education to backward regions. Unless measures are initiated for this, higher education will continue to be the prerogative of upper castes and classes from the urban areas. our country is culturally rich. The rural culture is yet to find a place in the curriculum. The study of foklore, subalternism etc. should find a place in the educational content if education is to extend to geographical boundaries not covered till now.

There is a need to link centres of higher education with the community. It is not sufficient that colleges critically examine issues. They should be made to involve themselves in projects and issues around the vicinity to make education relevant. Students in Social Science should assist the community by enlightening people on social issues and developmental activities. The Commerce students could assist in setting up cooperatives, seed banks and other financial and savings schemes. Students of Science could involve themselves with pollution control. Such involvement would equip the students for the fulfilment of the objective and purpose of higher education - to be instruments of social transformation.

Decentralisation is the most urgent need of today. Decentralisation would not merely help in de-politicisation of our campuses but it would also assist in avoiding bureaucratic inefficiency, delays and procedures. Each college functioning as a University would be able to set its own standards with regard to curriculum, performance and evaluation. It would be easy to evolve need based courses and programmes if higher edcuation is decentralised. The present lethargy among the staff can be got rid of. The UGC raised the salaries of the teaching staff after the 1986 policy under the wrong assumption that higher scales will better motivate the staff and the level of commitment among them would improve. However this has not happened. What is essential is to link salaries with outputs. Higher the output in terms of teaching and research by the staff, higher could be the salary. The present emoluments based on seniority should be modified. The 'hire and fire' system is essential. No college or University would like to do away with the services of efficient staff members. But teachers should not be paid for merely for teaching in the centres of higher education. Research is an equally important aspect. Therefore, publishing of papers, assisting in consultancies and generating new thoughts and ideas should be made a part of the profession by providing higher salaries for staff members who undertake such work. Those who do not publish or are not in a position to sell their ideas in the classroom should be kept stagnating. Unless challenges are offered and demands are made, higher education will not come out of its present malaise. Continuous evaluation of the staff through objective evaluation methods should be a part of the process.

Finally in spite of all the consultations held, the 1986 policy was a policy of the central government. When the State drafts a policy it does so in keeping with its own vision of society and the goals State has to achieve. What we need now is a peoples' policy for higher education. For this what is essential is a nation-wide movement, involving the intellectuals; intellectuals who are sufficiently autonomous standing between the State and the people with a strong commitment to the weaker sections of society. Intellectuals who do not have strong commitment to the weaker section of society who constitute the majority in the country cannot bring about changes: A people policy for higher education would be possible if the intellectuals committed to the issues of society establish a close bond with the rest of the population and mobilise various groups and associations for the revamping of the educational system.

The question is how to get the necessary support at the micro and macro level for a new policy? A new policy needs political support without political interference. Governments very often respond to pressures from political and social groups. Voluntary groups and associations may have to be organised. Pressures from both within and from outside the Government is, therefore, necessary to carry out radical educational changes. All these groups need to be conscientised towards an educational vision for a new society.

Changes have to be initiated at the micro level. But changes do not take place at the micro level without creating awareness and consciousness. Therefore, it is important to recognise that while permitting colleges to experiment in innovations and changes it may be necessary to organise student groups, local panchayats, NGOs and peoples committees to exercise pressure. The success of the moves for transforming the educational system will depend, to a large extent, on arousing popular enthusiasm and the support the cause gets from major social classes.

The 'Critical dimension' characteristic of higher education that needs to be aroused in students cannot be done in a State controlled system where the content is prescribed by the University, teachers are paid by the State whether they perform or not and papers are evaluated in a centralised hall without knowing the students and the subject. A content that is question-oriented, a staff that is provided security on the basis of professional achievement, a syllabus that is issue and people oriented, controlled by the community instead of the State and where all segments of the community - whether they are in higher education or not, participate is the need of the hour. Decentralisation can provide people's participation available for the total running of colleges and Universities and for making higher education relevant.

Notes and References

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IGNOU's : Challenges of Quality, Quantity and Equity*

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1. Introduction

Open learning system has been initiated in India to augment opportunities for higher education, as an instrument of democratizing education and to make education a life long process. IGNOU was established in 1985 for fulfilling a dual role: as an open university and as an institution for coordinating, promoting and determining standards of distance education in India[1]. During the last few years IGNOU has grown in all its activities and is one of the five mega open universities in the world.

The expectation of *'democratisation of education'* in the Indian context assigns unforeseen responsibilities to the open learning system. The Indian formal education system with 220 universities, 8000 colleges and an enrolment of 6 million covers only 7% of the 17-22 age group, which is far less than in the developed countries. The existing enrolment of about one million in DE institutions forms about 13-14% of the teritiary enrolment. Any expectation to reach the level of developed countries would need a three-four fold increase in student numbers. Added to this are the adult groups at higher ages who need higher education in the modern fast developing and changing society. The challenge of quantity is in giving access to millions. The challenge becomes quite formidable if one considers the heterogeneity in socio-economic and educational background as well as the multi-lingual composition of the Indian population.

The process of globalisation is bringing in many new dimensions, one of which is the maintenance of high standards in educational materials and services, which are expected to be comparable and competitive at national and international levels. This is bringing in the concern for quality. Since knowledge is becoming, in the post-industrial scenario, a driving force for the engine of development, no country can afford to keep its people without education. In a country like India, faced with socio-economic and regional disparities, providing equity in access and success in educating people becomes an important challenge.

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Indian Distance Education System is therefore facing challenges of quality, quantity and equity. The challenges are quite formidable and need concerted national efforts to face them effectively. IGNOU as a '*national*' open university with different types of roles is expected to lead the development of the OU system that could help in facing the problems successfully. The paper considers the background of various developments going on in India and proposes broad strategies and programmes to be adopted for successfully tackling the concerns of quantity, quality and equity.

2. Distance Education System

The Distance Education System in India consists of two types of institutions; dual mode universities having Correspondence Course Institutions (CCIs) and single mode universities - the Open Universities.

2.1 Correspondence Education

Started in the sixties in response to giving wider access to those who could not continue their university education, the correspondence course education has expanded considerably. In 1962, the first School of Correspondence Education was started by Delhi University. Now 44 Universities have Correspondence Course Institutions (CCI) offering education to 524,435 students during 1993-94. Out of these dual mode universities, five have enrolment of more than 50,000, 22 universities have enrolment ranging from 500 to 10,000 and 4 have less than 500. Most of the CCIs offer courses in the areas of humanities, social sciences and commerce. Professional courses are mostly in teacher education, management and computer education. Some specialised universities like BIT's Pilani and J.N. Technological University offer course in engineering subjects. About 12 CCIs have relaxed formal entry qualifications for admission to their degree programmes of general nature.[2]

2.2 Open University System

The open university system was established in India to introduce and develop open and distance education that is innovative, flexible in its offerings and open in terms of methods and modes of learning and evaluation. It is expected to be an alternative cost-effective non-formal channel of education, supplementing and complementing the conventional channel by offering a *'second chance'* of education to those who missed the formal stream.

Out of the seven open universities established so far, the two [Nalanda Open University (NOU), 1987 and M.P. Bhoj Open University (BOU), 1992] are non-functional and Babasaheb Ambedkar Open University, Gujarat is in the process of launching its academic programmes. The broad features of the four fully functional open universities i.e. IGNOU, BRAOU, YCMOU and KOU are given in *Table* for an overview of the system. The magnitude of operations can be noted from the number of programmes and courses offered by these universities and the total enrolment of learners. The annual student enrolment of these four universities is 200,939 in 1995, with a cumulative enrolment of 571,983. These universities have established a wide network of Regional Centers and Study Centers for providing student support services. Around 20,000 academic counsellors have been engaged by these universities to provide tutorial and counselling services to learners. The counsellors are mostly full-time academics of the conventional system, and take up their assignments on a part-time basis. The open universities also employ full time academic, professional, administrative and technical staff to manage the system. The total staff engaged by these universities on a full-time basis is 2,359 of which 540 are academic staff. The open universities in India, though few in number, have created an impact on higher education by developing a wide range of programmes, by employing audio-visual technologies in instructional materials, and maintaining high standards. The learning material is self-instructional in nature and covers a wide range of subject areas usually not covered by dual mode universities. Seventy nine programmes with 840 courses at different levels i.e. certificate, diploma, degree, post-graduation and research levels offered by the four OUs cover in general professional, technical/vocational programmes besides the conventional disciplines easily accessible to the distance education mode.[3]

The open universities use the course-team approach to develop multi-media instructional materials with in-built quality assurance devices. The programmes are offered through Study Centres (SC) or Work Centers (WC) spread all over the region under the jurisdiction of the University. The SCs/WCs are coordinated and helped in the academic delivery by the Regional Centers. Academic counsellors are usually local experts working in and around in institutions where WC is located. They are oriented to the D.E. mode and they encour and assist students in their self-study, assess their assignme periodically. The assignments form a part of continuous evaluation a have a weightage of 25-30% in the final evaluation. The course e evaluation is carried out at the SC/WC under the supervision and cont of the university.

Table : Open Universities in Brief - 1995

Details of Information	IGNOU	BRAOU	YCMOU	KO
Programmes on offer	34	14	20	1
Courses on offer	372	178	171	12
Students Registered	91,398	57,499	43,485	8,55
Students on Rolls	242,000	180,000	129,863	20,12
Regional Centres/ P.G. Regional Centres	16	12	7	
Study Centres	244	100	353	2
Academic Counsellors	12,800	3,245	1,922	1,91
Students awarded Degrees/ Diplomas/Certificates	8,917	20,582	1,300	
Audio Programmes Produced (Cumulative)	605	1,732	226	-
Video Programmes Produced (Cumulative)	512	178	101	-
Staff Strength	1,259	495	268	373

2.3 IGNOU and its Apex Body Role

Indira Gandhi National Open University has been established t perform a dual role: as an Open university for the whole country an as an apex body for the distance education system in India. The secon role is performed by establishing a statutory body of IGNOU i.e. th Distance Education Council (DEC) in 1992. IGNOU is slowly acquirin the third role of the Resource Center through

(i) Staff Training & Research in Distance Education (STRIDE for training of all the fuctionaries in distance education i India and South Asia

(ii) Electronic Media Production center with state of the art facilities to be used at the national level for developing audio-visual support to learning materials; and

(iii) Teleconferencing Facility with uplink at IGNOU to extended C-band transponder given by the Indian Space Research Organisation for training and developmental activities through distance education.

IGNOU has taken bold initiatives in developing and offering programmes in disciplines like computers, management, nursing, etc. by evolving innovative delivery methods.

3. Policies and Performance

3.1 The National Policy on Education, 1986[4] states that the Open learning System has been initiated in order to augment opportunities for higher education, as an instrument of demarcating education and to make it a life-long process. The flexibility and innovativeness of the open learning system are particularly suitable to the diverse requirements of the citizens of our country, including those who had joined the vocational strea.

IGNOU is established in 1985 for fulfilment of the objective with a dual role of working as an open university and also for providing support to the establishment of Open Universities in the States.

3.2 IGNOU set up a Distance Education Council (DEC) as a statutory body in 1992 for the promotion, coordination and determination of standards of the open university/distance education system[5]. DEC is expected to carry out the following activities:

- The DEC will take steps for networking the State Open Universities and other distance education institutions, for sharing courses and programmes, and developing a pattern and structure for the open university programmes that would facilitate student mobility across programmes as well as institutions.
- The Open University/distance education programmes would be structured on a modular pattern with provision for transfer of credits. Students will have the facility of registering for courses of their choice which, in appropriate combinations, will enable them to obtain certificates, diplomas or degrees.
- The DEC will encourage joint development of programmes and courses by IGNOU, State Open Universities and the Direc-

torates of Correspondence Education of Conventional Universities.

- It will also recommend financial assistance from IGNOU to State Open Universities for their development and for undertaking specific projects.
- It will initiate steps to organise programmes of training for the development of human resources for the Open University/distance education system especially in such areas as course development and production, organisation of support services, etc. The possibility of establishing institutional mechanisms for this purpose will be explored.
- The DEC will ultimately assume the responsibility for developing the existing correspondence education programmes on a selective basis and converting them into distance education programmes of an acceptable quality.

However, for the time being, the responsibility for the developing of distance education programmes in the conventional universities will remain with the UGC. There would be close consultation between the UGC and IGNOU in the development of such programmes.

In response to the policy directives, IGNOU has established with IGNOU for transforming CCIs to the DE mode. A joint UGC-DEC Committee established in 1995 is promoting the transformation of CCIs to the DE mode. The CCIs may come under DEC jurisdiction from the 9th Plan period starting from 1997-98.

3.3 A policy decision that each State should establish on open university was pursued but has met with little success. During the 7th Plan period (1987-92) four universities i.e. KOU, NOU, YCMOU and BOU were established. During the 8th Plan period (1992-98) Gujarat OU was established in 1994 and two more i.e. Karnataka and Kerala OUs are in the offing.

3.4 On the use of electronic media and new communication technologies in distance education, the Central Advisory Board on Education (CABE) Report-1994[6] recommends in general:

(a) Creation of an educational broadcast system for sectors of education, particularly to support distance education, that includes dedicated TV and Radio channels serving both nationwide needs as also local, language/region-specific needs.

(b) Greater use of communication technologies by DE institutions, and the creation of adequate facilities for software development.

(c) Research and development in communication technologies by keeping in view future development and needs.

The next few years may witness a sudden increase in the extensive use of newer technologies of mass communication and personalised interaction, which may bring about a paradigm shift in open and distance education.

3.5 Enrolment & Programmes

The four OUs had an enrolment of around 118 thousand in 1992. By 1997, it was expected to be increased by 400,000. In fact the open and distance education systems were expected to attract 50% of the school pass-outs and raise its total share from 11.5% of the total enrolment in Higher Education in 1992 to about 16.5% in 1997[7]. Enrolment in OUs and CCIs is around one million and forms about 13-14% of the total teritiary enrolment.

3.6 Observations

1. OU enrolment is more in the mature age group of 23-35 years. Students passing out of higher secondary in the age group of 17-21 find the conventional system more attractive. The total enrolment did not rise to the targets set for the 8th Plan.
2. Professional courses like management, computers and teacher education have a far higher enrolment and greater demand. IGNOU enrolment in management courses rose from 4300 in 1987 to 62,000 in 1996. Computer courses were launched in 1992 and the enrolment in two Ous (IGNOU & YCMOU) has gone upto 25,000.
3. IGNOU courses use English and Hindi as media of instruction. Only three other regional languages are covered by State open universities and eight major regional languages are yet to be covered. This has also affected the coverage.
4. Features such as range of courses, flexibility and modularity of the open learning system are not yet fully exploited. Short term, need-based and relevant courses fulfilling requirements of various target groups will have far more demand.
5. OU System is suffering from centralised structures, lack of quick communication to its students and reliance on formal system for academic services to students at the Study Centre (S.C.) level. Various alternatives have to be evolved by developing decentralised system and employing communication technologies.

6. OU's are still working in isolation and for wider access and diversity it will be necessary to adopt a partnership approach with many institutions and organizations which need training & education for their development. This will also ensure the relevance of courses offered.

We are now at the stage of preparation of plans and programmes for the 9th Plan period (1997-2002).

4. Challenge of Quantity

4.1 After a decade of educational services, IGNOU has been recognised and respected for the quality and standards of its programmes. The D.E. methodologies offered by the OU System are being appreciated and are in demand by many ministries and agencies for solving their longstanding training needs and for extending some of the developmental programmes like *'Panchayati Raj'* to the grass-root levels. Such demands include

1. In service training of primary and secondary teachers
2. Training of village level functionaries for implementing 'Panchayati Raj' (self-governemnt rule) programme.
3. Skill training and entrepreneurial development of youth in rural areas linked with programmes like TRYSEM and JRY related to training and employment of youth in rural and urban areas.
4. Training of health workers, police personnel etc.
5. Dissemination of recent agricultural science and techniques to farmers through extension services and agro-science centres.

In the examples cited above, the total target group in each case has a size of a few millions. In India, every delivery of a programme going to the people will have to be conceived in different regional languages.

4.2 IGNOU is trying to adopt the types of activities mentioned above as its extension and continuing education programmes. They are to be developed and delivered through collaborative efforts with the ministries concerned and public, private and non-governmental agencies. The role of the OU is limited to the development of successful methodologies and relevant materials to achieve the goals of the programmes.

4.3 The formal education system serves 106 million students at the primary stage, 39 million students at the middle stage, 23 million students at the secondary stage and 6 million students at the teritiary stage of education. It has been observed that nearly 75% of students dropout of education before they reach the 10th standard leaving only 25% to avail of higher secondary education. The figure further drops to about 6% at the tertiary level in the 17-23 years age group. With the achievement of universalisation of education at the school stage, the current enrolment at the tertiary level will have to be fourfold. The developed countries with their present coverage of 20-30% of potential learners at the tertiary level, are already attempting to raise this figure by expanding their educational system. Trying to reach a comparable target in India will mean a manifold multiplication of the existing facilities. Resource limitations of a developing country will not allow large scale expansion of the formal system, and hence the OU system is considered a cost-effective alternative to absorb increasing enrolment.

While considering the need for higher education, we should not forget the adults in the rapidly changing world of work. In fact that is the main largest group of the open learning system. The developing of a modern technological society, which demands quick changes in the skills of the work face, needs educational and training facilities on a large scale.

An overview of the total target groups clearly indicates that the OU system in India has to develop its structures and programmes to fulfil the higher educational and training needs of millions of people. IGNOU alone cannot cope with the challenge and the educational policies clearly indicate a collaborative and partnership approach for pooling resources and expertise of all the OUs and DE institutions for developing diversity in its programme offerings and extending outreach to millions.

4.4 Strategies for Ensuring Quantity

For facing the challenges of quantity and diversity IGNOU, as a leading university, is adopting the following strategies and programmes:

4.4.1 Strategies

1. To consolidate the existing OU activities and expand them by re-engineering university structures on the basis of decentralisation of operations and student service related activities at the Regional Centres and Study Centres.
2. Use mass communication media (broadcasting and teleconferencing and computer network) for offering academic

counselling, services and training over the network for large scale dissemination of educational programmes.

3. Develop Regional Centres and Study Centres as resource centres and promote establishment of multi-media learning centres all over the country through private and public institutional participation.
4. Ensure and encourage participation of public and private institutions for jointly developing and delivering educational programmes.
5. Offer a large number of short-term relevant learning capsules through continuing and extension education for allowing large scale enrolment. It will be essential to use modern technologies for ensuring flexible features of open education such as walk-in admissions, on-demand examinations, credit accumulation, academic upgradation, etc.
6. Cover wide areas of subjects and topics required in a wide variety of activities related to living and working at various levels in sectors such as services, industry, agro-industry, education, culture etc.

4.4.2 *Educational Networking of Open & D.E. Institutions - (OPENET)* : The plans and programmes of DEC are evolving a model of sharing DE resources for strengthening the system and extending its outreach[8].

One of the major programmes undertaken by DEC-IGNOU is the development of Open Education Network (OPENET) in India. The OPENET at the beginning will have the following components:

(a) **Physical and Intellectual Network** of 41 Regional Centres offering 79 Academic Programmes with about 800 courses, with 20,000 counsellors through 721 Study Centres from where five hundred thousand students will be served annually. The RCs and SCs will be developed as the Resource Centres of the Network.

(b) **Broadcast Network** for offering programmes of education and training on an interactive Communication Channel through national broadcast on education channel and Teleconferencing network of Teaching End and Receiving End rooms. The Teaching End from is located at IGNOU headquarters with uplink to extended C-band and Receiving End rooms are located at 23 places covering RCs of IGNOU and some study centres. Plans are to reach all RCs and SCs in the near future.

(c) **Computer Network** that will link all the open universities and their Regional Centers and in future all Study Centers for communicating voice, data and images.

The OPENET will be integrated to facilitate information flow through a network at the national level such as NICNET, ERNET or International network. It will also be expanded to include all the Distance Education Institutions.

4.4.3 Programmes of DEC

The DEC fulfills at present the Apex Body role of IGNOU through co-ordination, promotion (giving grants to State Open Universities and Distance Education Institutions for their development) and maintenance of standards. The last function, in due course of time, may become assessment and accreditation of DE programmes and Institutions (OUs and CCIs).

The DEC has now started developing the following programmes:

(i) Common pool programmes from IGNOU and State Open Universities (SOUs). Later on programmes from Correspondence Course Institutions (CCI) could be added to the common pool.

(ii) Development of norms and criteria for judging standards and quality of programmes.

(iii) Staring of Common Resources by SOUs and CCIs. An MOU is being developed with Gujarat State OU to use Regional and Study Center facilities jointly.

(iv) Consortium of IGNOU & State open universities on an equal basis for developing a common educational network (OPENET)

(v) Common and Central data bases for all distance education institutions in India

(vi) Credit transfer system amongst OUs and later on among other institutions.

At present IGNOU forms the major resource center for DEC in all its programmes. In the development of the DE system in India, market motivation is going to be a major attraction and some DE institutions may offer programmes without adequate attention to their quality and standards (e.g. Management courses through DE). DEC has to play an important role in such a situation.

4.4.4 *Programmes of Continuing and Extension Education*

In a country like India, with great disparities in economic status and educational background, the university system has adopted extension education as its third dimension, teaching and research being the other two. Extension has been perceived as extending the knowledge possessed by the few and concentrated in some places to people at large who need it for their sustainable development. IGNOU is adopting this function and proposes to offer its network support along with services in giving education and training to empower people and their organization i.e., Non-Governmental Organization (NGOs). The delivery will be through private and public organizations. The programmes are being conceived in response to the needs of the people as assessed by the developmental agencies and organizations and delivered through close collaboration with these agencies, NGOs and others. The programmes of continuing and extension education may form a major thrust of expansion of the open university system to large numbers. IGNOU has the plans and programmes of extending education in *Panchayati Raj* (Self-Government Rule) to the village level functionaries, computer education, technical & vocational education etc.

It is hoped that the networking of open universities and D.E. Institutions may lead to an increase in access from the present size of one million to two in the degree/diploma programmes and to a few millions in continuing and extension course by 2001. Developing education technologies for large scale education is the major task of the OU system.

5. Challenge of Quality

Concern for quality is a concern of recent origin. So far, it was accepted that the quality and standards of educational programmes are to be judged and decided by the academic community in the University, and the autonomy of the university does not allow outsiders to interfere in any way in this function. The picture has changed substantially during recent times. For maintaining quality and standards in professional education in India, various national councils such as All India Council for Technical Education (AICTE), Medical Council of India (MCI), National Council for Teacher Education (NCTE), Distance Education Council (DEC), National Assessment and Accreditation Council (NAAC) have been established. Expansion and proliferation of education associated with societal and political pressures obviously lead to dilution of standards in university programmes and lead to the creation of 'outside' authorities for the maintenance of standards.

Recently a new shift in providers of education is taking place. Besides the conventional university institutions, unconventional institutions, often originating from various sectors such as industry, banking etc., are becoming providers of eduction partly to fulfil their sectorial needs. Some are entering into the *'educational market'* to offer *'marketable'* programmes in the areas of management, computers etc. This diversity requires institutional structures and mechanisms for assessing quality and accrediting the institutions for the benefits of the customers i.e. students.

DEC has the responsibility of the maintenance of standards in D.E. programmes. It is, therefore, working closely with similar institutions (NAAC, NBA of AICTE, NCTE, etc.) in establishing quality assurance mechanisms. The following activities are being planned.[9].

1. Established of norms for the maintenance of standards in programmes such as in management, computer and teacher education through D.E.
2. Transformation of CCIs into DE mode by following the guidelines evolved by the UGC.
3. Development of Manuals for assessing and accrediting DE courses, programmes and institutions.
4. Developing of a system for ensuring/assessing the quality of programmes provided by DE institutions.

In a country like India where diversity, heterogeneity is great and the majority are disadvantaged due to their location in rural areas, socio-economic conditions and lack of educational access to better equipped institutions, there has to be a radically different approach to the maintenance of quality.

One of the approaches being developed is the national support through networks, particularly through broadcasting and teleconferencing, by offering counselling, teaching/training in common pool programmes. At present IGNOU-DEC has receiving-end rooms at 23 places and proposes to cover 200 locations within a year.

6. Challenge of Equity

India is a country with a large population (900 million) with the wide disparities in socio-economic and educational backgrounds. One of the major programmes undertaken by the Government is the Literacy Mission aspiring to eradicate illiteracy (48%) and offer functional literacy and skills to neo-literates. Nearly 25% are still below the poverty line and the recent policies of liberalisation and globalisation have increased the pace of development and sustantially reduced the number below the poverty line. All these factors lead to the adoption of policies to eliminate disparities. Some of the major steps already adopted are:

1. Reservation of seats in admission to education programmes, in positions of teaching and non-teaching staff of institutions.
2. Free education to socially backward students. No tuition fees for economically backward students and free education to girl students in some states.
3. Provision of facilities such as hostels, and books to disadvantaged students.

However, the process of removal of socio-economic disparities is quite slow and painful and India is struggling to establish a society based on equity and justice. As the education expands with a quantum jump due to the paradigm shift brought about mostly due to the communication revolution, access to education will be necessary to take advantage of development processes to improve the standards and quality of life. The rich can have such access easily, but not the poor. This may lead to a widening disparity between rich and poor. While considering the quantity and quality of education, equity therefore acquires equally great, if not higher importance, in the process of development of a just and humane society.

Modern communication technologies are costlier and may not be available and accessible in rural and hilly areas and to poorer people. However, with a little political will and appropriate national policies, communication technologies have a great capability to reach the unreached and to bridge the gap of disparities. The process of education with a conventional approach is dominantly of a 'diffusion' or 'cascading nature', with best educational facilities being available at metropolitan cities and lesser and poorer facilities in town, districts, blocks and, villages, in that order. Now with the employment of CTs, the best expertise and learning facilities could be made accessible and available to all the disadvantaged learners wherever they might be located. The following approaches are proposed:

1. The use of mass communication media for reaching all in English, Hindi and in each major regional language. Community learning centres equipped with TV and other learning facilities could be established in every village school.
2. Develop computer networks that could reach every place with a telephone receiver and give access to educational resource centres. Private and public institutions and organisations may

establish such educational facilities and the nation can provide toll-free educational services to disadvantaged learners.

3. Establish multi-media learning centres with public and private support and offer free or economic use of facilities to disadvantaged learners.
4. Promote partnership with Non-Governmental Organisations for empowering peoples' organisations and people by offering appropriate and relevant education and training programmes.
5. Identify and adopt best indigenous models of mass education appropriate for adopting them in the D.E. system aimed at achieving sustainable development.

7. IGNOU's Challenges

The open and distance education system is best suited to face the challenges of quantity and quality. The vision of IGNOU-2002 proposes to establish OPENET that may have a consortium of all open and distance education institutions. All the policies and programmes outlined above may lead IGNOU to be an institution of a completely different nature. It will play various roles such as open university, agency for coordinating, promoting and maintaining standards in D.E. (DEC), a national resource centre, etc. It will be a lead organization playing a catalytic and promotional role to develop the open university system in the country.

To sum up, during the next five years the OU system should try to:

1. Develop OPENET providing access and an information communication network to all educational institutions in India as a national facility.
2. Jointly develop high quality multi-media programmes useful for multi-channel learning in all areas of knowledge and in particular in professional, technological and vocational areas.
3. Promote CT use and develop of *'Resource Centers'* and *Multimedia Learning Centers* in all parts of India for giving wider access to all learners.
4. Establish partnership with industries and various organisations and institutions for offering training and retaining of personnel in and around the industry and institutions.
5. Undertake programmes of transforming existing print knowledge into user-friendly electronic storage to be made accessible through nodes of network.
6. Undertake training and development programmes to develop expertise to use and maintain CTs.

7. Undertake research and development to promote application of CT in education and development of educational technologies.
8. Adopt policies and programmes for ensuring equity, access and success for all, particularly for the disadvantaged learners.
9. Develop DEC and NAAC to function as Accrediting and Quality Assessment bodies for all programmes/courses put in the OPENET.
10. Adopt and implement all measures initiated by DEC such as Credit Transfer, Grading System, Common Pool Programmes, Sharing of *'Resource Centers'* (RC, SC) etc. for network development.
11. Take the support of the Commonwealth of Learning (COL) to ensure the quality of programmes for their recognition at the international level.

Since the technologies are changing rapidly, it will be rather difficult to have long-term programmes. But the strategies proposed above may help in making the open university system in India capable of facing the challenges of quantity, quality and equity and help in laying down the foundation for developing a knowledge based society. IGNOU is destined to play a vital role in all these changes and developments.

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Improving the Question Paper

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The nucleus of the system of examination is the question paper. “Ask no questions and you would be told no lies,” says the English Bard. Question papers have ever been the butt of criticism. Some of the stock charges often levelled are—these are difficult, lengthy, out of syllabi, vague, give little choice, and so on. In some Universities, outside examiners set papers. These are often dubbed as difficult, lead to walkouts—particularly when internal moderators are not there. When they are appointed, the same papers are found all right. Two things are obvious: mostly teachers, not students, complain about the papers; the phenomenon is a serious reflection on the teaching - learning activity on the campuses.

Questions set are usually of three types: essay type, short answer-type and the objective or multi-choice type objective. Some examining bodies prefer essay-type questions, while others favour an admixture of the three. All types have their own advantages. For example, an essay enables us to judge one’s way of thinking, consistency, command of language, vocabulary and knowledge, whereas the short answer-type indicates examinee’s knowledge and clarity of approach. Objective-type questions indicate one’s quickness of thought and grasp of the data. All things are important at their places, and none can replace the other. An ideal question-paper, therefore, may have a judicious mix of all the three. Many agencies, including Association of Indian Universities and Banking Services Recruitment Boards, have prepared excellent Question Banks.

Several experiments have been done in this context. There was a time when the common pattern involved only essay or at the most “note-type” questions. “Attempt any five questions” was the general “note” inserted at the outset. Now there are usually units and sub-units. An effort is made to cover units and the entire syllabus. The Central Board of Secondary Education has introduced two additional innovations to ensure coverage of the syllabus and clarity about the exact answers. The Boards insists on getting a blue print and major clues to the expected answers on prescribed performas. Several Universities get at least three sets of question papers prepared by the same examiner and use any question paper they like in an examination. The Banking Services Recruitment Boards often prepare four or six sets of papers and change them after every seventh candidate in the examination hall so as to obviate chances of copying.

What are the problems one faces in preparing a reasonably good question paper? These are four. First, one has to work hard and read the syllabus thoroughly. The general tendency to choose questions of previous years' papers after adding one or two statements is indicative of erratic or indifferent work. Secondly, not only questions are to be framed but their answers too have to be clearly thought out. In case of screening tests, authorities always insist on securing keys to the right answers. Third, the paper-setter should come to the level of average students of the concerned class. We should test what the students know or should know, not what we know. It is certainly not the forum to parade one's scholarship. However, the worst thing is to consider paper-setting a commercial assignment, thinking all the time of the money it brings.

At the University level, there are other difficulties as well. Reforms are discussed at the general level, whereas the question papers relate to particular levels, in respect of various disciplines. What is advisable at the macro level may not sound logical or feasible at the micro-level. Thus the issues should be discussed frequently in groups, sub-groups at seminars and symposia. The UGC refers to only common things about question papers in its minimum programme of examination reform:

a. The syllabus in each paper should be demarcated into well-defined units/areas of content along with a topic-wise break-down. The units may be numbered.

b. Examiners should be free to repeat questions set in a previous examination. This is necessary in order to ensure that students do not leave out important portions of the syllabus. Instructions to paper-setters should be amended accordingly.

c. There is often a very wide choice given to students for answering questions, say 5 out of ten. Such overall choice restricts the area of knowledge with which a student can pass an examination and, therefore, is undesirable. If there is choice, it may be provided by alternate questions in each unit of the syllabus.

These are broad-based stipulations. We require closer scrutiny and detailed analysis of all elements of question papers. And the pattern finally evolved should be made public. Students should be acquainted with it. They should know how they are going to be tested so that they could prepare themselves accordingly.

Reforms in question papers call for composite endeavours. Patterns of examination for screening tests may be different from those of academic examinations. However, in terms of syllabi and modes, they need not be poles apart.

Universities and School Boards of Education may arrange workshops for examiners and paper-setters to sort out such issues. But the basic things are teaching and learning. If students are taught well, any mode of examination or any kind of question paper will do. Unless this is done, all talk of improvement will prove futile. The University Grants Commission underlines this aspect when it insists: "No examination be held without fulfilling the requirement of a minimum number of lectures/tutorials/laboratory sessions, which should be clearly laid down by the University".

In practice, this condition is often not adhered to. The UGC has now concentrated specifically on this theme and come out with detailed directions and a provision for even financial help for the purpose. Some universities have introduced in right earnest, minimum examination reforms, others are planning to do so. The constitution of examination reforms committees by various Universities and School Boards is a pragmatic step in this direction.

Clear-cut and practical guidelines are required to improve question papers. In this respect, what the Delhi High Court suggested to the Central Board of Secondary Education (in its judgement on 27 May 1994 in Parents Forum for Meaningful Education and others versus Central Board of Secondary Education and others case) is useful and worthwhile for all examining agencies in the country. The Hon'ble Court advised as follows:

"1. Bye-laws and instructions must provide clear qualifications and disqualifications, of paper-setters, Moderator, Head Examiner, and Additional Head Examiner.

2. The paper-setter and the moderator must take into consideration that all the questions set in the paper are within the syllabus and curriculum.

3. They must also properly evaluate difficulty level of the question paper.
4. A proper evaluation must be made whether questions can be answered by an average student within the prescribed time, leaving some time for revision of the question paper.
5. The moderator must carry out a similar exercise independently.. In other words, the moderator must also solve all questions and evaluate the time which an average student would take in answering those questions."

The Yashpal Committee recommends two important things in its 12-point report: First, organisation of in-service teacher training programmes should be systematically designed and conducted imaginatively. Second, a review of public examinations at class X and class XII levels should be undertaken to ensure replacement of text-based/quiz type questions by concept-based questions.

Indeed, the question paper is a product of a system and interlinked fully with what comes before—teaching, formulation of the syllabus, text-books and what goes after—conduct of examination, evaluation, re-evaluation, and so on. So reforms at all stages alone will make for a total impact.

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Notes from Research

Implementing Instructional Design in B.Ed. Course*

V. USHA SRI

Introduction

Instructional design is an evolving discipline that has originated from social sciences, management sciences and information sciences for the systematic application of various instructional methods and technologies. Unlike in the traditional instruction, the learner and his learning are focussed in instructional design. Instructional design follows the systems approach consisting of a number of steps : assessment of needs, goals and priorities; analysis of resources, constraints and alternative delivery systems; determination of scope and sequence of curricula and courses and delivery system design.

At System Level

- teacher preparation
- formative evaluation
- field testing and revision
- summative evaluation
- installation and diffusion

At Course Level

- determining course structure and sequence
- analysis of course objectives

At Lesson Level

- definition of performance objectives
- preparing lesson plans or modules
- developing, selecting materials, and media
- assessing student performance (performance measures)

Salient Features of Instructional Design

Gordon (1968) suggests the salient features of a well-planned instructional design :

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* Based on paper presented at 26th Annual Conference of AIAET, Hyderabad held on 27-29 October, 1995.

1. Internal Consistency
2. Explicit boundaries and limitations
3. Not contradicted by empirical data
4. Parsimony
5. Usefulness
6. Comprehensiveness
7. Optimality
8. Breadth of applicability
9. Cost estimates
10. Time
11. Decision making

Pre-Requisites to Formulate Instructional Design

1. What should be achieved - objectives (desired outputs)
2. With what - principal inputs, content, learner, resources
3. In what context - environmental climate and constraints
4. When - the sequence of events that should occur
5. How - the strategies, methods, tactics that should be used
6. Who - the structure and grouping to be used
7. With what - instruments or media to be used
8. How well - the tests and control mechanism used

Instructional design prescribes methods of instructional developme procedures for instructional implementation and evaluation. It is concer with optmising the process of instruction.

Pre-Service Teacher Education

Teacher-trainees are learners of the art and science of teaching. T have to get familiar with the traditional as well as innovative curricula, subje and teaching methods. Environmental education is a recent addition to teacher education course. A teacher's role is not confined to the classroom or but extends to the community, a clientele of diversified capabilities, cover distance education modes too. So, while introducing environmental educat at B.Ed. level, the conditions and requirements of the community, cou content, nature of learners, teaching-learning strategies, evaluation techniq - all these are to be considered carefully.

Environmental Education

Since the Stockholm Conference on the Human environment, understanding of ecological realities has been further enriched from experien and acquisition of new knowledge in critical areas.

The UNESCO and other international agencies have played a key r in launching an international programme in environmental education. Stude inside educational institutions and the general public living in rural or urb areas should all be educated about the need for protecting environme Presently environmental education is viewed as an integral part of the to curricula.

Constraints in Implementing Environmental Education

Some of the difficulties faced by implementors of environmental educati are :

- Rigidities in prescribing curricula in schools and teacher training institutes.
- Conflicts that arise due to inter-disciplinary approach of environmental education in tradition bound teacher training programme.
- The lack of properly trained teachers to handle environmental education programme.
- Environmental education activity and field-based programme necessitates within and outside classroom activities.
- Teacher training programme faces problems such as : paucity of resource persons; lack of authentic updated materials/information regarding environment and its associated problems; non-availability of tools to assess the impact of training programme; lack of research in the impact of environmental education methodologies and competencies; resistance to change on the part of the teachers.

Instructional Strategies of Environmental Education

Instruction is a set of events which affect learners in such a way that learning is facilitated. The events may include both internal and external to the learner. The purpose of planned instruction is to help each learner develop as fully as possible in his or her own individual direction. The principles of instruction include the following:

(a) general principles of teaching
(b) principles of teaching a specific type of content.
(c) principles of teaching at each level of education, that is, elementary, upper primary, secondary etc.
(d) principles of teaching a specific type of content to students of a specific level of education.

Once these principles are derived, they can be used for a variety of purposes. Teacher training courses will become highly meaningful if these principles are taught. Continuous research and actual teaching will help in making it clear to the trainees as what methods to use for what particular topic and for what specific purpose. Robert Tennyson (1986) conducted a series of experiments and eventually developed an empirical instructional design theory for teaching concepts.

Objectives of Teaching Environmental Education to B.Ed. Trainees

Training B.Ed. students in the subject of Environmental education is two-fold. The one is to familiarise them with the contents of the syllabus and prepare them for examination while the other is to familiarise them with instructional methods which can be used by them as teachers when they go to serve as teachers. The Belgrade Charter has suggested six objectives of teaching environmental education :

(1) Awareness - to help individuals and social groups acquire an awareness and sensitivity to the total environment and its associated problems.

(2) Knowledge - to help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it.

(3) Attitude - to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation to actively participate in its protection and improvement.

(4) Skills - to help individuals and social groups acquire the knowledge and skills for solving environmental problems.

(5) Evaluation Ability - to help individuals and social groups evaluate environmental measures and educational programmes in terms of ecological, political, economic, social, aesthetic and educational factors.

(6) Participation - to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems to ensure appropriate action for solving the problems.

Main Characteristics

The main characteristics of environmental education as outlined in the UNESCO Tbilisi Conference are : problem-solving approach, inter-disciplinary educational approach, integration of education with the community, and a life long forward-looking education. Drawing from the lessons of the past, environmental education is concerned with both the present and the future. It therefore aims at providing individuals with knowledge, skills, and attitudes that will enable society to develop a new world view, set of values and environmental ethic.

Process of Implementation

After a careful study of the salient features and principles of instructional design, the lecturer (author of this paper) handling the paper Environmental Education in the B.Ed. course at Sri Sarada College of Education, adapted it with suitable modifications.

During the academic year 1994-95, instructional design was used to impart Environmental Education. Though the first semester examination was held after teaching the subject for three months, many associated activities were planned in such a way that they were carried out for the entire course (extending to the second semester also). The scheme was as follows:

Seminar

The trainees were asked to choose topics for seminar. The topics were: pollution of air, water, and soil; deforestation; ozone layer depletion; energy transmission; cycles of water, oxygen, nitrogen, carbon, phosphorus and calcium; wildlife conservation and breeding technology.

Guest Lecture

Salem has the largest number of sago factories and its sago production amounts to the country's highest portion. A guest lecture 'Effect of sago factory effluents on seed germination' was delivered by a Post Graduate Teacher in Biology working in a local school. The trainees interacted with the guest and got their doubts clarified.

Panel Discussion

A panel discussion involving the trainees was arranged on the issue 'Effective use of nuclear energy'.

Brain Storming

The interesting technique of brain storming was introduced to the trainees by asking them to offer ideas on recycling the various waste products.

Concept Mapping

Drawing flow charts and mapping the inter connections among the components of complex concepts were explained first to the trainees. Later on they successfully demonstrated the skill of concept mapping of the food web, food chain, interdependence of the components of eco system.

Value Clarification

The trainees were introduced to the methodology of considering conflicting situations and choosing priority values through value clarification strategies. Issues like 'switching over to non-conventional fuel sources' and 'Construction of hydro-electrical power projects' were taken up for this.

Quiz

Enthusiastic trainees were stimulated to frame and conduct a quiz in environmental education to their fellow trainees. The involvement was quite high.

Information Collection and Processing

Emphasis on the learning method is a chief feature of instructional design. Accordingly, trainees were asked to tabulate for a period of one month temperature, rain fall and humidity in different places of the State and the country. They later drew graphs and analysed the data.

Scrap books were prepared by the trainees where a wide range of topics were covered.

Review of Articles from Periodicals

The trainees reviewed articles on environmental issues which they presented briefly to their classmates.

Review of T.V. Programme

'Living on the Edge' - a programme covering wide range of environmental topics was watched by the trainees regularly and brief reviews were prepared by them.

Preparation of Source Book in Environmental Education

Groups of trainees joined together to prepare an informative source book covering topics of environment. It is a good reference book for teachers as well as students at the primary and secondary level.

Exhibition

During the special camp of the National Service Scheme the trainees organised an exhibition in environmental education. Students of the middle school where remedial teaching also was conducted, were actively involved in gathering the specimens and other material, arranging them to depict the concepts, and explaining the exhibits to the visitors. This gave the trainees an experience of vital significance. As many as twenty themes were arranged such as : eco system in a pond; trees for clean air; nitrogen fixation; soil made fertile by earth worms; filtration of water; preparing natural manure; garbage and waste management; pollution from vehicles; pollution from industries; pollution from sewage; pollution from refrigerators, air conditioners, chemical products and sprays; over population and pollution; nuclear pollution; noise pollution; water pollution; forest as an eco system; effects of deforestation; green house effect; acid rains and ozone layer depletion and bird and animal sanctuaries in India.

Educating the Community

During the community service sessions, the trainees contacted rural people to keep their surroundings hygienic to prevent the growth of disease causing germs that throng filth.

Lecture Demonstration of Fuel Conservation

Petroleum Conservation Research Association of Madras conducted a lecture demonstration on the economic use of common fuels like petrol, L.P.G., kerosene and electricity and also maintenance of various domestic appliances and gadgets, vehicles etc. to get maximum service from them. It was later on demonstrated by the trainees during community service.

Attitude Towards Environmental Issues

An attitude scale covering statements on environmental issues was administered to the trainees. The post-course scores of attitude scale revealed significant positive attitude towards environmental issues in the trainees.

Evaluation

Evaluation of awareness, knowledge, understanding, and application was conducted. Formative evaluation was done by asking for the trainees reactions about instructional design and strategies employed in instruction and the involvement of the trainees in learning the subject. At the end of every week feed back was collected from students for this purpose. Also a careful observation of the teacher to find out the degree of involvement and participation by the trainees in the learning process served as a cross check criterion reference.

Summative evaluation was done in two ways: The university examination marks of the trainees in the subject Environmental Education revealed that their theoretical knowledge was quite impressive - nearly seventy per cent of them getting first class, twenty per cent second class and the rest pass division. The overall feed back from the trainees revealed that they found the instructional design approach very interesting and useful; they played greater role in learning and what is more, they used what they learnt in passing on to the community. The trainees also reported that they became more attentive to environmental issues and about their responsibility. Moreover, unlike mere learning about other models of teaching, the trainees actually experienced instructional design as a strategy of instruction leading to effective learning.

Limitations of Implementation

1. Quantitative evaluation does not give complete understanding of the effectiveness of implementing instructional design. Hence, qualitative evaluation also had been done.
2. Constraints of time, fixed schedule in time-table, hectic nature of B.Ed. course allow very little flexibility.
3. Changes in awareness and attitude occurring in the trainees are so subtle and continuous that we have to rely more on self-appraisal reports, and feedback from the trainees besides observation and interviews.
4. Variation in the acquisition of knowledge, understanding and skills in the trainees is due to individual differences.
5. Any innovation can be carried out with a lot of planning, foresight and ability to deal with unforeseen problems that arise while executing the plan. Innovations have to be carried out for successive years, if we want to consider their lasting impact.

Conclusion

Instructional design is a sound approach to bring about better organization of instruction. Its interdisciplinary nature is particularly useful for subject areas like environmental education, which draws from various other disciplines involving a lot of practical training. As Mc Combs (1986) has suggested instructional design is a dynamic, flexible and creative process. The experience of the present study gives us the confidence that such innovations are possible for implementation and they yield encouraging results, like, the trainees understanding instructional design by undergoing it and practising it too.

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Documentation

Towards the Re-structuring of Undergraduate Education*

VEENA DAS

A long term perspective on academic renewal in the University of Delhi requires us to think of the nature and function of the university and locate the different kinds of crises that the university system in the country faces today. Since there is no magical formula which can be applied in a quick and ready fashion for academic renewal to take place, the Committee on Academic Renewal proposes to study one problem at a time and to produce a series of formulations for the renewal of academic life in the university. This report is the first of this series.

One of the most important features of the University of Delhi is the heterogeneity of institutions, the variety of functions and the different pedagogic practices that are found within the same university. The portfolio of responsibilities of the university include general and professional education, the responsibilities for development of new knowledge, and responsibility of advanced training for research. In addition the university is responsible to several kinds of communities and it has reacted creatively to the social problems of the milieu in which it is located. For example, the university community has responded to violations of human rights by focusing attention on the victims; it has helped in the organization of relief following the earth quake in Uttarkashi, and it has been actively involved in evolving its own policies of affirmative action for disadvantaged groups. Teachers of the university have received recognition for their work nationally and internationally. Yet there is a wide spread, and in our opinion, justified feeling that the university is in a crisis; that there is a severe crunch on resources which will not allow research and teaching to be continued at the levels at which the university can make significant contributions to knowledge; that good teachers are demoralized at the lack of opportunities in the university; and that the scale of expansion will lead to a collapse of the normal mechanisms of regulation as evidenced in complaints regarding absenteeism of teachers in some colleges and the anomie visible in the instances of violence in the campus. There are those who think that an application of industrial norms (making teaches sign registers; maintaining surveillance on the class room) is all that is required to solve the crisis. We feel that while it is very important to generate a climate in which regular teaching as well as the integrity of the examination system is restored and where students can pursue studies in an atmosphere of peace and security, there is also need to go beyond the policeman's approach in order to revitalize the university system. Although we shall be addressing each of the portfolio of responsibilities that we mentioned earlier, for purposes of this report, we would like to concentrate on undergraduate education. The reasons why we consider undergraduate education to be central to the life of a university—even a research university—will become clear. At the moment let us only mention that the training of young minds through a general education as well as the strengthening of graduate level training is only possible if undergraduate education in the university is vibrant and healthy. We start by asking what is the nature of the crises in undergraduate education? Our formulations on this are based on formal meetings with teachers and principals, informal discussions, the writing generated by teachers of DU in newspapers, magazines, journals and books; discussions with students, and a study of reports prepared by several committees of the university at different points of time.

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* Text of a paper prepared for the Academic Renewal Committee set up in 1991 by Prof Upendra Baxi, then Vice Chancellor, University of Delhi, with the spirit that "a good University, far from resting on its Laurels, should constantly introspect its past and agonise about its future. The quest for academic renewal should be a continuing one, marked by a critical discontent with the existing state of learning, teaching and research in the University".

The Crisis

Stated in a stark fashion and without making all the necessary qualifications, the major crisis facing the colleges in Delhi University seems to be that principals, teachers, students and administrators do not have any sense of control over their work environment. They have come to experience the institutions and the organizations within which they work as major obstacles to their life projects rather than spaces within which their academic potential may be realized. This sense of alienation manifests itself in different ways, some of which are mentioned below.

1. The corporate life of a university is realized at several levels. As a formal body the corporate nature of the university resides in its statutes and ordinances which the university community actively shapes and agrees to uphold. Regular interaction in the formal bodies of the university and a transparency in decision making is the first step in building a sense of involvement in the university as an organization. For several years the life of the university community suffered enormous damage because the regular meetings of the Executive Council and Academic council did not take place. We are happy that one major change in the last two years has been the restoration of regular meetings of the EC and AC. However a certain cynicism prevails in the academic community regarding the fruitfulness of regular attendance. Some of this springs from the feeling informally expressed by several members that proceedings are dominated by elected members who are more interested in representing trade union interests. On the other side, several

teachers feel that university professors attend meetings of the AC only when an item pertaining to their own department is to be considered. These views, however, can become self-fulfilling prophecies if they are not addressed in an open and honest manner. It is imperative that full participation in the Academic Council and Executive Council be restored so that it can become a forum through which the collective wisdom of teachers representing different academic orientations and different kinds of strengths may be represented. It will be necessary to improve the functioning of the Academic Council so that not only are important issues of policy discussed but there is a rationalization of the formal procedures and an efficient use of time allocations.

2. In any large organization, the formal structures can represent only a fraction of the corporate life of a community. In a intellectual community like the university, the corporate life is embodied in the face to face relations that make up communities of learning. It is in the contexts of the class room, the library, the laboratory and in the discussion among teachers sustained on an everyday basis, that we may find the sources of creativity. Seen from this point of view, the college is the true locus of the corporate life on which undergraduate eduction is sustained. Among the colleges in DU we find an enormous variation in the extent to which different colleges are able to maintain a corporate life. In some colleges teachers and students spend a major part of the day in the college itself. Apart from interaction in the class room there are also clubs, association, study circles, seminar groups, and other forums in which interaction on scholarly issues and interaction over other activities is maintained, constituting perhaps the most precious experiences of undergraduate eduction.

On the negative side there are colleges in which teachers are not found on premises beyond 12.30 p.m. when the first D.T.C. special leaves the campus. There are allegations that regular classes are not held in several colleges and very few colleges are able to have regular tutorials. As a result neither are the pedagogic requirements of students met nor can one say that teachers are able to influence and shape young minds through moral mediation. The growing incidence of violence in the colleges, sexual harassment against women students, and an atmosphere of insecurity and intimidation is evidence of the deep crisis in these colleges. The nature of Delhi as a metropolitan city with its residential spread, the inadequacy of public transport, and the violence and harassment encountered in public spaces, especially by women, contributes to the absence of corporate life. Clearly the question of academic renewal is deeply tied to the question of restoration of the corporate life of the college.

3. Evidence of the sense of alienation among teachers is also found in the way in which career advancement is conceptualized and planned by teachers. We have found that teachers of undergraduate colleges seem to want to prove their worth by showing that they engage in post graduate teaching or by guiding research. It is felt that for intellectual life to be maintained the only road is through study leave, or by winning a fellowship or a teaching position in a research institution or university abroad. This in itself would not be symptomatic of a deep malaise if the teachers also looked at their own institutions as sources for intellectual development. However, with very few

exceptions, the college and the entire process of undergraduate education in which the teacher is engaged for the major part of his or her academic life, is seen as hindrance rather than a space for intellectual advancement. The demands of undergraduate teachers have been for more opportunities to engage in postgraduate teaching and in supervision of research rather than greater autonomy in shaping the curricula and pedagogy of undergraduate teaching.

4. It should not be assumed from the above that teachers in colleges do not have an interest in undergraduate education. It is rather the case that the entire process of syllabus making including choice of texts for teaching has become extremely rigid over a period of time. Because of the emphasis on uniformity of the syllabus for a particular course, teachers can only depart from a syllabus that may have been formulated several years ago, or one which does not suit the particular requirements of their students, on an informal basis. Hence the good students learn to distinguish the process of learning from the process of examination. The good teachers who try to incorporate new developments in the subject or new methods of teaching know that they are facing the risk that the examiner may know less than the student and may therefore penalize the student. Clearly the process of academic renewal will have to find ways of empowering the teacher and the teachers in turn would have to take major responsibilities for their students and for the way in which the curricula is formulated.

5. One of the sources of frustration for the undergraduate teacher is the emphasis of uniformity in courses, the pedagogic methods and the system of examination. The great heterogeneity of institutions in Delhi University cannot be overemphasized. The colleges in Delhi are catering on the one hand to students who are highly skilled and who can compete with the best students in the major universities of the world. On the other hand, several colleges, because of their spatial location cater to students who may be first generation literates and who travel everyday from adjoining rural areas or resettlement colonies to attend college. Life in college and the educational process means very different things to these different categories of students but the importance of the opportunities offered by college to each of these categories should not be minimized. No doubt, some of these differences reflect the difference in life chances due to the system of social inequalities in the wider society. Some have suggested that this heterogeneity should be sought to be corrected by an introduction of a rule by which admission to a college must be based upon residential proximity. It seems to us that this would not address the problem at all for it would simply open up avenues of corruption and it would interfere with the basic principle of liberty for both the college and the student. The university cannot correct every kind of injustice emanating from the wider society but it can be responsive to the needs of different kinds of students if it pays attention to, and respects different kinds of life projects.

At present the emphasis upon uniformity has several unfortunate consequences. First, the Hons. level courses are taught in several colleges but due to the variations in the educational background of students who are recruited, not all colleges are able to cope with the syllabi in their teaching. As a result there are courses in which the failure rate is very high in several outlying colleges. Because the good students migrate to the better known colleges in the second or third year of the Honours course and teachers are left with students who have been unable to get admission or migration elsewhere because of their poor performance. In some colleges only three or four students are left in many Honours courses in the third year. This in turn means that teaching and tutorials suffer and both teachers and students find very little intellectual fulfilment in their work. A second consequence of the insistence of uniformity is that the revision of syllabi to incorporate new developments at the undergraduate level becomes a very difficult task. On the one hand there are colleges in which students find it difficult to cope with the existing syllabus and on the other hand there are students who do not find the syllabus challenging enough. Clearly a need to rethink the very structure of the curricula in which the different needs of students may be addressed is urgently needed.

5. The different kinds of divisions in the teaching community in the college which may have an adverse impact on its corporate life need to be openly addressed at the level of the college. The most important of this distinction seems to be that between older and younger teachers. To some extent the division between the generations is common to every institution. What has caused us disquiet, however, is the oft stated belief that when teachers join a college they are enthusiastic, committed to the cause of their students and to the life of the mind but the cynicism and lack of commitment they encounter in their senior colleagues makes them 'hardened' and 'cynical' over a period of time. There are obvious elements of stereotypical thinking in this but any organization should be concerned at the level of cynicism and gestures of ironic negation of the young teachers in Delhi University. There is a feeling among them that older teachers block reform because they have become set in their habits.

The system of academic rewards in the college favours older teachers over younger ones. In the present scheme of rewards time is the crucial resource and teacher becomes qualified to become a Reader simply by passage of time. This must obviously favour older teachers over younger ones. Secondly, there seems some pressure to evolve mechanical systems of academic evaluation more suited to a bureaucracy than an academic community. It is imperative that academic rewards should not be tied up with age and academic merit should be respected and rewarded.

It would be in the interest of the university if creativity at every level can be brought to bear on the task of academic renewal. However, this can only be done if it is recognized that younger and older teachers bring different kinds of strengths to teaching and research. Further, the age at which a teacher or researcher reaches maximum creativity seems to vary from subject to subject and while younger teachers may be very good and agile in handling new developments or highly technical parts of a subject, more mature teachers may be better in presenting synthetic or developmental aspects of a subject. Later we shall suggest how a change in curricula and pedagogy may help in breaking through the tensions between older and younger teachers; those who wish to equip students to handle efficiently the technology of a subject and those who think that an undergraduate of Delhi University must be, above all, an educa person.

6. While we have laid the major emphasis on the alienation felt teachers, we do no wish to underestimate the frustration of principals a administrators on account of the interference from external agencies in academic processes of the college. It is an alarming fact that the univers administration itself may come to be experienced as an 'external' agency tl is interfering with the smooth functioning of a college. For instance, princip have pointed out that in the past, students who were short of attendance w permitted to appear in examinations despite the information sent by the colle Similarly, although marks obtained in internal assessment prepared by t college are sent to the examination branch, these have not been recorded. far as these problems are concerned the university authorities have categorica assured the members of the committee and the principals of colleges that t rules on attendance and other matters would be respected and upheld. Colleg are therefore requested to be vigilant in the monitoring of these aspects a should not hesitate to point out any anomalies that come to their notice. Th are, however, other contexts in which over centralization of decision maki (e.g. the University Library System) has had pernicious consequences for nor functioning of smaller units.

As far as interference in the affairs of the college by external agenci such as political parties, government officials etc. is concerned the proble is more difficult to tackle since teachers and administrators in the college m themselves co-operate with the external agencies. One very important step this direction has been the nomination of eminent people involved in the proce of education as chairpersons of governing bodies of colleges rather th practicing politicians. All problems of external interference, however, cann be laid at the doorsteps of politicians and a self-critical analysis is immediate called for.

Step Towards Restructuring the Undergraduate Curricula

The idea that the curricula at the undergraduate level should completely restructured is hardly new. In the university's own archives the are reports suggesting changes which range from radical ones such as t switch to a credit system and the relatively incremental ones which sugge some tinkering with the organization of subsidiary subjects. The UGC has al prepared model syllabi in different kinds of subjects.

In the opinion of this committee, a radical rethinking on the nature undergraduate curricula, including not only revision of syllabi but al pedagogic methods and methods of evaluation is urgent. However, nothi substantial will be achieved if the colleges where the teaching is done are n actively involved in the process of this rethinking from its very inception. would be contrary to the whole spirit in which we conceptualize academ renewal if any committee, whether of the university or the U.G.C., were simply give a finished syllabus for implementation. Therefore what we a providing here is a different structure than the present one within which think that it would be possible for different colleges and departments to bri their individuality to bear on the task of academic renewal. In our opinion, such a structure would be also more responsive to the diverse needs of the undergraduate students.

Diversity in the Student Body

Let us mention briefly here what appear to us to be four different streams of students whose demands on the university are of very different kinds.

1. One may identify the first stream as that of students who wish to seriously pursue a subject at the post graduate level and who may either go for a professional course or for advanced research in their chosen subject. This is a stream from which the university as a research university will be recruiting its major student body. This stream of students will form the highly qualified technical personpower. Innovations in research, critical thinking and generation of knowledge will depend critically on how well his student body is trained right from the undergraduate level. Although it is true that a large number of students in this stream would have enjoyed the advantages of a good education at the school level as well as the symbolic capital which comes from early access to books, critical discussions in the home and availability of role models in the home, this class of students is by no means completely closed class. In fact it must be remembered that there are many subjects which a student could only pursue overseas in the fifties which became available for study in Indian universities thereby opening up new opportunities for the middle classes. A second important factor contributing to the openness of this class is the increasing number of women students who compete successfully with male students and who are not confined to so-called soft subjects. The number of women students pursuing research in the sciences in Delhi university in some subjects is now larger than the number of male students in these subjects. This is a phenomenal change for a society like India and the university can take justified credit for having broken the stereotypical role models for boys and girls in higher education. Thus the educational needs of this class of students must be addressed (despite charges of elitism or of catering only to the princes to use the colourful phrase of Cliffard Geertz) not only because we cannot afford to neglect the creation of a skilled professional class but also because the neglect of these students will mean a far greater dependence on universities abroad for the recruitment of professional people in the future.

2. The second stream of students is those who intend to join the government, the corporate sector, or the media. They are looking for a good education but not necessarily a highly specialized one. For lack of other choices they often take admission in Honours courses but are part of that 50% of students in Honours courses who will join other kinds of courses at the post graduate level such as management institutes, law schools, journalism, film technology, mass communication, etc. Since they do no have a commitment to a single discipline but would like a good education their needs are different from students of category.

3. The third stream of students is those who may come from less advantaged socio-economic backgrounds and have not had very good schooling. Some students from these groups will flower in the new opportunities provided

by the university. Others, however, find the Honours courses very difficult to deal with and they opt for pass courses. For these students the opportunity to study in the university is strongly tied to the need for employment and economic advance. Many students who are first generation literates come under this category. In our opinion the university has been most neglectful of this category of students. It is possible to think of nodal level courses that are oriented to employment (that does not mean only vocational courses), which will not only meet the demands of this category of students better but will also fulfil important societal needs.

4. The fourth category of students of those who want a degree as a matter of status but who are an important societal resource. First in this category is women students who are in college biding their time and expect to get married after graduation. Since educated brides are in demand they are using college as a 'waiting period'. It is easy to be contemptuous of this category of students. However, a historical perspective on this problem would make us realize immediately that women's education was introduced in this country because of the felt need that educated women made better wives and mothers. The social strata which first permitted women to get educated has now moved to a state in which their daughters are pursuing education for serious careers in the professions. The aspiration for educated wives and mothers is now felt in a different strata of society. Even if these women do not aspire to a professional careers, their education is an important societal resource for the social transformation of society in such fields as health and education. The education of women is intricately linked with improvement in health of children and their education. We are not endorsing a patriarchal ideology in which the women is seen only as a home maker but we are suggesting that the educational needs of those women students whose own understanding of their lives is framed by their roles as mothers and wives also needs serious consideration. We cannot substitute an objective 'best interest' criterion for subjective preferences but we can provide opportunities for a better self understanding as well as a better understanding of the world so that these resources can be brought to bear on their construction of future roles. It must not be forgotten that women need diverse kinds of knowledge to deal with situations such as domestic violence, harassment over dowry or unexpected death and destitution that they may not have anticipated in their adolescence.

This category of students also includes men students who will be self employed after graduation because of their family resources in both economics and politics. Unlike students in category 3, they are not depending upon their university education to provide them with the skills necessary to engage employment.

It should be remembered, however, that this categorization is not fixed. Throughout the undergraduate career students will discover new interests, form new identities and change their life projects. Hence the curricula should be flexible enough to take the uncertainties of young people into account by allowing for midstream changes and also allowing for re-entry into university after a period of time spent in employment outside the university. Such possibilities of re-entry should also be available to women who may have spent a concentrated period of time on bearing and rearing children.

At present the courses at the B.A. level are organized largely into Honours streams and the pass course streams for sciences, humanities, social sciences, fine arts, etc. In addition there are opportunities for vocational studies and some professional courses. We believe that the basic division between Honours and pass course streams needs to be modified for the following reasons.

1. Students fail to get a good general education leading to a situation in which science students are cut off from developments in humanities and social sciences and students from humanities and social sciences do not have basic literacy in science.

2. Although several students elect for the pass course which has a higher recruitment than the Honours courses, they are disillusioned by the large number of students in class, the outdated courses and the lack of opportunities after completing their B.A. or B.Sc. The pass course is treated in some colleges as a dumping ground for those who are not good enough to get admission in Honours level courses.

3. The needs of specialization are also not adequately met since uniform Honours courses are taught in large number of colleges but as mentioned earlier, students with specialized skills congregate in a small number of colleges leaving many colleges in which only four or five students remain in any particular Honour course in the third year.

4. Students who join Honours courses do not necessarily want to continue in that subject after the B.A. Although precise statistics are not available it is our impression based upon limited information that almost 50% students of Delhi University who join a particular Hons. course do not continue in it for post graduate studies.

5. Given the new thrusts in several disciplines it has become necessary that students should have knowledge of sister disciplines. For example, a combination of biology, physics and computer sciences will equip a student to take up neurosciences better than concentration on a single discipline. Hence flexibility in he choice of subjects must be built into the system.

6. At the B.A. level it is important that students be given a greater opportunity to experiment. Many subjects are taught for the first time in college and students opting for a subject at the age of eighteen may need opportunities to change options on the basis of greater acquaintance with the subjects.

Keeping all this in mind we have worked out the following structure of courses.

1. There would be a set of core courses geared to the general education of the student. These core courses will fall under following six categories:

(a) Indian society
(b) Study of one foreign society
(c) Language study
(d) Scientific literacy including methods of reasoning
(e) Forms of moral/philosophical reasoning
(f) Literature, Aesthetics and Appreciation of Cultural Forms

Each college will formulate a certain number of courses under each of these categories which will be taught to all students as part of their general education. The particular courses need not be common to all colleges but a sufficient number of courses in each category will be available so that students and teachers can exercise some choice. A number of colleges may get together and offer facilities for cross registration in certain number of courses to their students.

As an example we can imagine a college in which course structures may include the following:

India

Contemporary Indian History; The Structure of Indian Economy; Physical Geography of India;. Gandhian Thought; The Indian Novel; and Population of India.

In the category of Foreign Societies, a college may chose to specialize on one region -e.g. Africa or China or offer courses on more than one society

Under the category of language study, facilities may be offered to learn both classical and contemporary languages. Students may learn a new language, Indian or other, but in our opinion compulsory English or Hindi should not be pushed. If a student is using English as a medium of instruction then he or she should be required to acquire competence in that language but if Hindi is the medium of instruction then the emphasis should be on acquiring competence in Hindi. In either of these two languages, the students must be required to take one course in writing.

Under the category of scientific literacy, there could be substantive courses on Environment, Ecology, Theories of Evolution, Cosmology. For developing skills of reasoning a choice may be offered between Basic Quantitative Methods; Introduction to Logic; Elements of Symbolic Logic; Computer Languages.

Under the next category of Literature, Aesthetics, and Appreciation of Cultural Forms, the student should get an opportunity to make a choice between traditional courses on literature to courses introducing new developments in critical theory. He or she should be able to opt for both theoretical and practice oriented courses on painting, music, film appreciation, and theater under this category. Our undergraduate courses do not offer opportunities for learning through non verbal methods. By equal emphasis to the visual, the musical, the kinetic, and the tactile, through introduction of courses on music, dance, sculpture, film appreciation etc, these avenues of learning and experience can be opened to the student.

Finally we have introduced the category of Forms of Moral and Philosophical reasoning, because we feel that an opportunity to study questions of ethics, moral reasoning or the way in which philosophy, anthropology, or natural sciences address moral issues must be provided to the student. Under this category it should also be possible to introduce students to a sample of writings of any important philosopher or a philosophical text.

A college may be expected to evolve 12 to 18 semester level courses under this "core curricula", and the student may be required to take 8 courses from the core curricula. We shall come to the time framing of when these courses should be taken later—as important issues of pedagogy are involved in these decisions.

The second set of courses would be subject oriented. We suggest a core of eight semester level courses that may form the foundational courses for a discipline. As in the present system these courses may be evolved at the level of the department and the college representatives.

A third set of courses would be elective courses reflecting further specilization in a subject. A whole set of optional courses (12 to 16) may be evolved and a minimum of 8 elective courses would be available if the college is offering specialization in that subject.

At the level of courses then, we shall have one set of core courses for general education, one set of 8 courses per subject regarded as foundational courses and one set of 12 to 16 courses per subject regarded as foundational courses and one set of 12 to 16 courses regarded as elective courses. We now turn to the question of how many courses will the student have to take in the three years of his or her studies; the combinatory possibilities and the kind of flexibility in the system.

The following is the scheme we suggest:

1. All students begin with four of the courses for general education in the first semester and four courses in the second semester. The first year is, therefore, devoted to general education. Students would have a choice of courses within each category but each student must take the minimum of one course in each category.

2. In the second year students may make a choice to opt for the following:

(a) they may continue to work for a general degree in which case they may combine different courses from the foundational set—giving them the competence in more than one subject. These students may be expected to join professional courses such as Management, Administration, Law, Social Work or to join the administration in the private or governmental sector on the basis of public examinations or other tests of competence. What these students would receive is a combined Honours degree.

(b) A second set of students may wish to join job oriented courses. They would have to take a set of 8 foundational courses designed to serve the needs of the particular job oriented course that they would be taking. For example, a student wishing to learn Environmental Management may have take foundational courses in Biology, Chemistry, Human Geography, Economics. The specialized courses for these students would be in one specialization. For instance, those doing Environmental Management may be offered courses on Waste Land Development; River Pollution; Hazardous Industrial Materials; Environmental Law along with practical apprenticeship with a group working on Environmental Protection. Other examples of su functional specializations may be video making; public healt translation; textile designing; pottery making; commercial art; infa management in creches. Detailed examples of this possibility w be provided later in the report.

(c) Honours degree in one subject may be taken by taking the fundamental courses and selecting 8 elective courses in the subje Here the emphasis would be on the current developments in t subject so that students can cope with the rigors of the M.A. syllabu By diversifying the streams of undergraduates, the proliferation Honours courses should be halted.

For purposes of organizing the time of the courses there are tw alternatives. The first is that a rigid schedule is laid out. In the first ye students complete the core curriculum for general education; in the secon year they follow the foundational courses; third year they take electives, f instance. The second alternative is to provide some flexibility so that t student may be required to earn a certain number of credits (24 in all) ov three years but he or she may build up an individual schedule in consultatio with an adviser. Colleges may, in fact, experiment with both models.

Required Institutional Changes

If such a scheme becomes acceptable as an alternative to the schem that is currently in operation the following institutional changes will have t be worked out:

1. The designing of the core curricula would be the responsibility individual colleges and the syllabi will be approved by the academic committe of the college. An interdisciplinary committee of the university may have t be created to monitor and keep liaison with colleges on the core curricul The colleges would be free to consult different departments and researc organizations to form courses under each category.

2. The foundational courses will be designed co-operatively between th subject development committees as is the present practice and will be approve by Committee of Courses and Studies and Faculties. Special care will hav to be taken to see that foundational courses designed for job oriented course have the objective of training the student for employment in mind. To tak an example, a student who will take a course in health technology may hav to learn something about epidemiology and health statistics but here th knowledge of statistics will be geared towards public health issues.

3. Elective Courses may be designed at several levels. If a college ha a strong competence in a specialized field, it may design an elective cours and get it approved through the Committee of Courses and Faculty. This woul mean that research interests of teachers in colleges will feed directly int formulation of courses. It will however be the responsibility of the Committe of Courses in a subject to see that if a college is offering Honours in one subjec then it must have the competence to teach advanced level optional course in that subject.

4. Methods of small group interaction will have to be evolved. At the moment the tutorial system is the only model of small group interaction at the college level. An increase in electives and offering a flexible time schedule to the student may lead to small classes which would be as asset. Also if classes are mixed by age so that some senior and second year students can offer the same course due to flexible times schedules, much peer group learning may also happen.

5. There would have to be a shift from mass examinations as at present to college level evaluation. Evaluation will also have to be subject specific and may include evaluation of term papers, projects, as well as public examinations.

6. The college will have to take the responsibility of making an assessment of the particular needs of their students. The system of multiplying the same courses everywhere must give way to a system in which local knowledge is used to create meaningful syllabi. New kinds of courses, such as courses on agricultural pesticides, design, desk top printing, video production, infant management in creches, must be encouraged so that colleges can have a diversity. Also the students who wish to specialize in one subject and hope to continue at postgraduate and research levels must be given a much more rigorous training than at present.

7. Offering such a diversified and option oriented syllabus is likely to make people feel that the ready mechanical criteria which were available to judge students will be lost and confusion may occur. It is true that under the new scheme the student who applies for admission to a post graduate course cannot be compared to another student on the basis of a mechanical criterion like the relative marks of one against the other. However, it has been the experience of most departments that marks obtained in mass examinations do not provide a very reliable criteria for judging a student. To our embarrassment we have seen that a student getting a first division in an Honours subject in B.A. may perform poorly in the admission test. Under the scheme suggested here teachers will have many kinds of information about a student. It would then be the responsibility of a department or an employer to judge the individual merits of a student on the basis of different kinds of information—his or her performance in different kinds of evaluation procedures (term papers versus mass examinations), in different kinds of skills and the methods used in several universities for making a judgement on a student by a combination of different kinds of information would have to be used. In other words, the university instead of being a certifying institution should become transformed into a teaching institution.

8. Opportunities for teachers to develop new skills must be provided. His means that one would have to provide for flexibility for a teacher to move between different subjects. The opportunity to offer both courses in core curricula and advanced courses that are subject specific should mean that different kinds of skills (e.g. technical competence as well as general understanding) may be communicated to the students. This should help in introducing innovations without being experienced as a threat by older teachers.

The Immediate Program For Action

Although our proposal is for a radical reconstruction, the change can only be brought about in an orderly way. We suggest he following steps to be taken within a time frame:

1. In the academic year 1992-93, colleges and departments may begin to both discuss these proposals and formulate courses through active discussions with colleagues and students. Some Colleges, we believe, have already thought of alternate courses. If these can be formalized so that they can be ready for implementation in 1993-94, then the formalities for introducing the new scheme in the colleges that are ready with it may be completed in the next year. Considerable work will have to go into this as consultations at several levels would be required as well as preparation of teaching materials. The committee is in the process of consulting several eminent people who may help in the formulation of such courses and a list of resource persons will be soon available.

2. The Department must be asked to initiate the process of formulating foundational courses through discussions in general body meetings, committees of courses etc. so that these may be ready at the end of the next academic year.

3. Suggestions for the courses to be offered as electives may be discussed and formulated at the level of the departments and colleges and brought to Committees of Courses and Studies.

4. As far as job oriented courses are concerned we believe that an expansion of job opportunities will happen in the following sectors: media, mass communication, service sector, NGOs, and small scale entrepreneurship. For such courses to be successful, a liaison between the college and the likely employers is extremely important. Such liaison should be established as soon as a college considers a specilization under this category. In fact continuous contact with likely employers for students doing job oriented courses will have to be maintained so that there is a continuous feed back between the college and the employing agencies.

The Committee for Academic Renewal suggests that every college may be encouraged to offer some of the courses that they have formulated under this scheme even before the formal adoption of the scheme. Students who volunteer to take these courses may be given a certificate from the college which may be treated as an additional recommendation for the student.

Finally we wish to say that our fundamental philosophy has been to find ways by which the creative energies to teachers can be released and education be made meaningful in the everyday life of the university. The role of individual creativity in the production and reproduction of knowledge cannot be minimized. Knowledge must be seen in the process of communication that is embedded in social organization, rather than as fixed body of information.

The exercise that we have done for the restructuring of undergraduate education will have to be done for post graduate education as well as research. Each of these will require that we address ourselves to a new set of questions which we can formulae after we have spent the same effort in discussions with colleagues from colleges and departments. However, the restructuring of undergraduate education should not be seen as an affair of the college alone. While we have been greatly concerned that the creative energies of the teachers in colleges should not be blocked, a great co-operative effort will be needed to share knowledge and concerns and to provide expertise wherever this is available in the university system. The intricate linkages between the different parts of the university system are such that one cannot simply develop the university as a research university while ignoring the other portfolios that are part of the functioning of the university.

If this scheme of restructuring is accepted in principle, several modifications will become necessary as consultation proceeds further. However if we do accept the underlying principles laid out here, then our next step will be to do a detailed exercise on the demands for resources and sources of resource generation for such an option oriented undergraduate education and its needs for institutional flexibility.

Example of the Pathway of a Student Taking a Course on Environmental Management

1. Core Curricula : Selects (a) Indian Social Institutions (b) Famines in the African Continent (c) Modern Hindi Prose; (d) Writing Course in English; (e) Elementary Statistical Methods; (f) Theory of Natural Rights; (g) The Gharana Tradition; (h) the Nationalist Movement.
2. Foundational Courses from Economics, Biology, Botany, Chemistry, Sociology.
3. Specialized Courses on Agricultural Pesticides, Wasteland Development, River Pollution, Environmental Law, Hazardous Chemicals, Forestry, Apprenticeship with NGO working on Environment.

On Completion may work with an NGO.

After 4 years of working, his organization may recommend him for more specialized training—to be offered at Post Graduate Diploma level.

To put such a course off the ground—you need one College that offers to adopt it. Co-operation with teachers of the existing course on Environmental Biology + I group drawn from the subject mentioned above + help from Pusa Institute or Centre for Science & Environment.

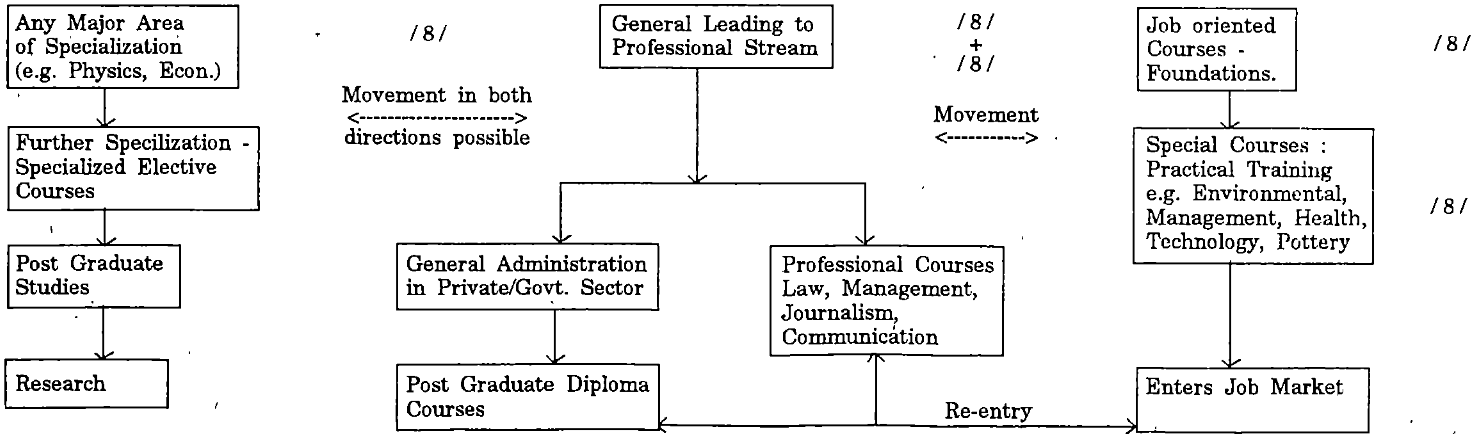
STRUCTURE OF UNDERGRADUATE COURSE

Core Curricula Ist Yr.

INDIA	Other Societies	Language	Literature/Aesthetics cultural/Appreciation	Scientific Literacy	Moral/Philosophical Reasoning
Examples 1. Contemporary Indian History 2. Gandhian Thought 3. Indian Economy : Major Features 4. The Novel in Indian Literature.	*Examples* Courses on one other society - e.g. China, Africa, North America	*Examples* 1. Classical Languages 2. Contemporary Indian Languages 3. English 4. Germanic/ Romance lan. etc.	*Examples* 1. Bhakti Poetry 2. Shakespearean Tragedies 3. Realism in Theatre 4. The Gharana Tradition 5. Painting 6. Sculpture	*Examples* 1. Theory of Evolution 2. Origin of the Universe 3. Quantitative Reasoning 4. Introd. to Basic 5. Introd. to Logic	*Examples* 1. Theory of Rights 2. Concept of Dharma 3. Study of any major philosophical Text

8. Courses to be taken by students, at-least one from each category.

FOUNDATIONAL COURSES


Any Major Area of Specialization (e.g. Physics, Econ.)
Further Specilization - Specialized Elective Courses
Post Graduate Studies
Research
/8/
Movement in both <-----------------------> directions possible
General Leading to Professional Stream
General Administration in Private/Govt. Sector
Post Graduate Diploma Courses
Professional Courses Law, Management, Journalism, Communication
/8/ + /8/
Movement <----------->
Re-entry
Job oriented Courses - Foundations.
/8/
Special Courses : Practical Training e.g. Environmental, Management, Health, Technology, Pottery
/8/
Enters Job Market

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Restructuring of Undergraduate Education*

NANDITA NARAIN

Introduction

At a time when the very raison d'etre of higher education in India is being questioned, it is imperative for us to address basic questions. What would we like the objectives of higher education to be, and what kind of course structure, method of instruction and evaluation would help us to achieve those objectives?

In an era of rapid world-wide changes, and economic and political upheaval, India seems to be struggling with its own identity crisis, crippled by social fragmentation and a complete erosion of values. Now, more than ever before, we need young men and women of high moral and intellectual calibre to lead us out of this morass - men and women who can rise above caste, class and communal prejudice, who can combine an uncompromising idealism and integrity with a relentless pursuit of excellence and who have a vision of the future and the tenacity to transform it into a reality.

Role of undergraduate education

Undergraduate education has a unique role to play in the formation of adult personalities and values. School going youngsters in India lead fairly sheltered lives and are handed down pre-fabricated value systems as yet untested in the 'real' world. Post-school exposure to 'reality' is often traumatic, and is soon followed by an almost embarrassed discarding of an 'outdated' idealism for a more pragmatic, if cynical, materialism as a part of 'growing up'. This is not to undermine the vital role that school education plays in value formation, but to underline the equally vital function of college education in this transition period from teenage to adult life.

Objectives

We have, in our Colleges, several lakhs of students, who, after graduating, have a variety of professional options such as research and/or teaching, management, Government service, private entrepreneurship, journalism, audio-visual media and law.

It would be unreasonable to expect undergraduate education to equip all our students with specific, comprehensive and tailor-made vocational skills for a job-market with fast-changing requirements. On the other hand, it would be reasonable and desirable that our students develop general skills and attitudes which make them not only employable and 'trainable', but also able to discharge professional responsibilities with a degree of commitment and competence. Undergraduate education should, on one hand, prepare students for all future professional and personal challenges, and, on the other, be conducive to their growth as responsible and responsive members of society.

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* Text of a paper prepared for the Academic Renewal Committee of the University of Delhi.

Desirable 'skills' would include analytical, verbal and interpersonal skills, axiomatic and critical ability, independent thinking, curiosity and the spirit of scientific enquiry, originality and innovativeness, the ability to put in a certain number of hours of work in a day, and the dynamism, motivation and stamina to achieve well-defined goals. These skills, although acquired through the study of specific subjects, are not subject-specific, and would go beyond the subjects to find application in all aspects of their (the students') lives.

Course structure

Undergraduate courses should be structured in such a way as to ensure:

(a) exposure to certain *core* disciplines which are essential for integrated development;

(b) flexibility in the choice of specific disciplines, which would enable students to discover their own potential and vocation rather than 'lock' them into a single subject;

(c) work experience and/or exposure to the practical applications of their discipline(s), by coordination of the Colleges/Departments with potential employers such as industry, media, NGO's, research institutes and the University itself;

(d) exposure to under privileged sections of society through 'social contact' programmes and projects devised by the schools of social work, Literacy Missions etc. to be picked up by different colleges. This, taken further, could be a novel and worthwhile way of students 'paying back' to society what the government spends on their education (rather than the unimaginative 'loan repayment' proposals which reinforce economic inequalities and have no educational value).

The following is a tentative outline of such a structure :

Ist year (i) Core disciplines

1. Indian Society
2. A society other than Indian
3. language
4. Logic
5.
6.

(ii) Optional Papers

Any *two* from a set of courses consisting of two basic courses designed by each department, of which one should be essential for further study of the subject.

(iii) Typing, shorthand and first-aid courses (credits).
(iv) One game or sport. (credit).

IInd year

(i) Any four papers from *two streams* with at least one from each stream.
(ii) Social contact project (credit).
(iii) Computer course (credit).

IIIrd year

(i) Any four from not more than two streams.
(ii) One practical application of discipline/more advanced theory course.
(iii) Work experience (credit).

Evaluation methods

1. Each Department should prepare and submit to the Academic Council *a blue-print of the evaluation methodology* being adopted by it, making mention of the specific abilities being tested and the kind of questions required to be set in order to achieve those objectives. After approval, this blue-print/guidelines must be circulated among paper-setters every year.

2. Each Department must also submit a paper on the *policy for the appointment of examiners* adopted by it. This policy should be one of rotation among the list of teachers teaching the paper and satisfying conditions specified by the Department. Evaluation should be compulsory for all teachers, those wishing to be exempted must apply for exemption, with reasons.

3. Question papers should be short and thought-provoking, and at least half the number of questions (to begin with) should be unseen i.e. they should not be identical to questions set in previous papers or available in standard text-books.

4. Twenty-per cent of the total number of marks should be *awarded through internal assessment,* based on periodic evaluation, the norms for which should be worked out by each College Department in consultation with the University Department. (e.g. 6 best tutes, 2 tests, 2 seminars).

These marks should be submitted to the Examination Branch by each College by the middle of February.

The marks in the internal assessment should be written separately, as part of the total on the mark-sheet.

Some monitoring committee should be set up (as a Standing Committee) to monitor the kind of internal assessment being done by different colleges.

5. The evaluation process should be more transparent, with students being able to get back their answer sheets along with a copy of the note prepared by the Head Examiner on the norms adopted for evaluation. Revaluation should be stopped although re-totalling should be retained.

6. Papers should be set by a board of examiners consisting of two college teachers with one University Department teacher as adviser. There should be no moderation. The paper-setters should be available for proof reading at the time of printing of the question paper.

Method of teaching

Classroom interaction must be collective and participative, more like a *joint exploration*, rather than a mere handing down of facts and theories by the 'teacher' to the 'taught'. A teacher could regard himself or herself as a slightly more experienced mountaineer who has to take a group of freshmen and women for a trek. The climbing of a particular 'mountain' (be it Economics, Physics or history) should not be as important as the fact of learning how to climb. It is this that will prepare them for all kinds of future challenges, each seen as a 'mountain' to be climbed. For the teacher to lead them blindfolded or to allow them to ride piggy-back would be, therefore, an exercise in futility. The process of individual and collective discovery must be continuously re-inforced.

Lectures and tutorials must be dialogues, with emphasis on *processes* rather than conclusions; on questions rather than answers. Students must be encouraged to inquire continuously and unashamedly, subjecting their own and others'(including teachers') propositions to rational and rigorous scrutiny, to formulate independent propositions and analyses and to articulate them coherently. Syllabi should be kept short in order to provide the space for students and teachers to experiment and grow.

For more effective communication, teachers must get to know the students in order to discover the idiom they relate to and the images they are comfortable with. This varies with socio-economic-ethnic background, gender, generation and indeed, from individual to individual. The temptation to address only the small (and ever-shrinking!) group of academically-oriented and already motivated students must be resisted. Motivation must be seen as, at least partly, if not largely, the responsibility of the teacher and an attempt must be made to build a rapport with every student in the class, whatever the level of ability and motivation. Rationalisation of the course structure and examination scheme would probably help to make this less of an uphill task than it seems to have become.

To this end, and as an end in itself, the human aspect of teacher-taught interaction cannot be over-emphasized. The forging of inter-personal bonds is a vital if not central, aspect of mutual learning and growth. Availability outside the class, and extra-academic interaction through extra-curricular activities and counselling is important.

Details of pedagogical requirements in each subject could be worked out by working groups set up by each Department in collaboration with the Department of Education.

College teachers should be encouraged to do research into pedagogical aspects of higher education in their own discipline, for which purpose a special research cell could be created in the Department of Education. This cell should design a *one-year training programme* (e.g. Bachelor of Higher Education) as an alternative to an M.Phil. for those aspiring to teach in undergraduate colleges. This programme should include courses on student psychology, public speaking, black-board techniques, organisation of material etc. Refresher courses on these lines should also be available for existing teachers.

Student Feedback

Although individual teachers would evolve their own method of initiating and sustaining a dialogue with their students, some degree of institutionalisation is necessary to ensure a minimum feedback in all cases. As a first step, I would suggest the revival of *Joint Consultative Committees* (JCC). on the following lines.

A J.C.C. would consist of all teachers of a College Department along with a class representative (C.R.) from each class being taught the subject. The C.R. would be elected from among those with over 66 2/3% attendance in lectures and tutorials separately, and would be required to gather responses from the class through questionnaires filled in anonymously by all members of the class having the minimum required attendance. The J.C.C. could be used for innovative academic regeneration as well as for dealing with problems of routine and regularity such as student/teacher absenteeism. A report prepared by the Head of Department would then be sent to the Academic Improvement Committee, a sub-committee of the Staff Council, for information and follow-up, if necessary.

Further Suggestions and Observations

(i) For the success of the re-structured system, the possibility of faculty/student movement across colleges and between colleges and university departments should be explored.

(ii) Tutorials must be held to all subjects, including science subjects.

(iii) Attendance rules must be strictly enforced.

(iv) Using student feedback, 'successful teachers should be located and used as resource persons in the training programme. Alternatively, interested teachers may be invited to apply as resource-persons.

(v) Teaching skills and inputs should be recognised as independent of (though not disjointed from) scholarship and research, and should be given much greater importance in selection, tenure and promotion. The present emphasis exclusively on research degrees has led to the neglect of the classroom by even well-meaning teachers. The fact that at present the only road to recognition and success is 'making a mark in the area of scholarship and research', has led to an obsessive preoccupation with research (of whatever quality) and an eternal merry-go-round of conferences at the cost of a meaningful interaction with students. Awakening the minds of generations of students requires single-minded and sustained effort, which is often not even regarded as 'work' by academic buffs! All this will have to change if undergraduate education is to have any meaning.

(vi) Individuality and heterogeneity among teachers should be encouraged. There should be no attempt to homogenize teachers by insisting, for instance, on a Ph.D. for all as the only measure of intellectual growth. It should be recognized that different teachers have different individual strengths, and have unique and equally important contributions to make to society and to their profession. Having fulfilled basic professional commitments(which often leaves room for little else!), teachers can grow and contribute to the growth of their students in a variety of ways. Continued research is one. Writing text-books, novels, poetry or plays, composing music, acting on stage or doing social work are others. The latter cannot really be measured in the way research degrees can, but they do and *must* exist. Quality research must be encouraged by giving incentives, faster promotions, increments etc. But the view that all teachers must do 'research' is as blinkered as the view that all students are potential researchers.

(vii) Teachers must, above all, teach by example. If teachers are not seen to be curious about events taking place around them, thinking independently and rationally about those events, and articulating their responses fearlessly, then they are hardly likely to inspire their students to do the same vis-a-vis either their subject or anything else.

Reference

Towards the Restructuring of Undergraduate Education

—by Veena Das,
Journal of Higher Education, Vol. 19 No. 2 Summer 1996,
pp. 259-74

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Volume 19 No. 2 Summer 1996

NAAC Guidelines for Initiation of Assessment and Accreditation Process: Preparation of a Self Study Report*

Contents

1 Introduction
2. Assessment and Accreditation
3. Rationale for Self-Study
4. The Process of Self-Study
5. On-site visit
6. The Outcome

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1. Introduction

Assessment and accreditation of institutions of higher education has become very relevant all over the world, more so in our country, to help maintain and improve their quality. Under the directive of the National Policy on Education (NPE) 1986 and the Programme of Action (POA) 1986 revised in 1992, the University Grants Commission (UGC), as per the provisions of its Act, established the National Assessment and Accreditation Council (NAAC), in September 1994, with its headquarters at Bangalore.

2. Assessment and accreditation process

The most important stages in the assessment and accreditation [AA] process are:

* Preparation of a self-study report by the institution
* Validation of the above by an on-site visit team and
* Final decision of NAAC based on the report of the team

3. Rationale for Self-study

Self-study is the backbone of the assessment and accreditation process. It is concerned with quality assurance by setting up of internal mechanisms and encouragement to institutional improvements through rigorous self analysis. It has to be an integral part of an institution's on-going planning and evaluation efforts, and helps it plan the quality improvement. It focuses on the institution as a whole and evolves a plan of action. A careful self-evaluation is crucial to any institutional effectiveness. The resulting document should present a clear, concise and accurate picture of the institution.

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* More information on the Manual for self study can be obtained from Director, National Assessment and Accreditation Council, Post Box No. 1075, Rajaji Nagar, Bangalore-560010.

Institutional self-study, along the lines suggested by the NAAC is primarily introspective and analytical rather than promotional. It is an opportunity for the institution to measure its own effectiveness and efficiency and think of ways to strengthen the weak areas. The self-study is, thus, the first and most significant step in the process of assessment and accreditation.

After receiving a request for accreditation from the institution, the Director, NAAC will request the institution to prepare a self-study report based on parameters and criteria laid down by the NAAC.

The parameters for assessment are:

I : Institutional mission and objectives
II : Curriculum design and review
III : Quality of teaching and learning
IV : Publications and Consultancy/extension activities
V : Organisation and governance
VI : Infrastructural facilities
VII: Support services (library, laboratory, instrumentation, computing etc.)
VIII: Student services
IX : Sources, adequacy and management of financial resources

In respect of each of the criteria, a set of questions are also provided to help the institution collect relevant information in as accurate and complete a form as possible. In the self-study report the focus should be on interpretation of data and the lessons for future planning and monitoring. The Departmenta profiles may be grouped school-wise or discipline-wise (e.g.school of languages or physical sciences or department of sociology or chemistry) for the analysis to be presented in the report. The coherence, lucidity, readability, and above all the candour, of the self-study report itself should reflect the institution's commitment to quality.

Presentation of raw data by and for itself may be done in appendices keyed to sections of the main report. Documents on which the data is based would form exhibits for the on-site visit team to examine if they deem i necessary. The presentation need not follow the sequence of the questionnaire if the institution finds a different organisation more meaningful to highligh its achievements and problem areas. It is helpful to seek answers to questions by locating concrete examples rather than in citing statutes and ordinances alone. How statutory provisions are implemented in practice reflects institutional policy and will build the institutional picture. The report should highligh

(a) decision-making procedures and delegation of powers
(b) innovations and quality assurance procedures in curriculum, teaching, learning and evaluation, research, administration, infrastructure, support services.

(c) cost effectiveness of courses and programmes
(d) introduction of self-financing and income-generating courses
(e) strategies for sustaining quality and for tackling problem areas

In no case should the report be presented in the question-answer format. The questionnaire is basically intended as a check list for data collection/ generation and a guide to introspection. In consonance with the spirit of the self-study but separate from it some of the questions also serve as suggestions for the Internal Quality Assurance Cell, whether in place already or in the process of being set up.

If the institution already has a quality-assurance cell in operation, the cell should provide an important component of both the data and the steering committee.

4. The Process of self-study

The institution may undertake the process of self-study in the following stages.

1. The head of the institution sets up a steering committee with a senior faculty member as the co-ordinator. The co-ordinator should be capable of establishing rapport with various constituencies of the institution and excelling in communication skills. The steering committee (of 10 to 20 members, depending on the size and complexity of the institution) should have members representing all the constituencies of the institution, i.e.faculty, administration, students and employers. These members should be persons:
    (a) who are knowledgeable about the institution and are committed to maintaining and improving its quality.
    (b) whose credibility is beyond doubt and are respected by all.
    (c) who are open-minded and impartial in examining difficult and/or controversial issues and have the skill and ability to finish the task in a time-bound manner.
2. The committee studies the questionnaire and assigns responsibility to various members according to their expertise in the area of information required in the sub sections of the questionnaire. It may inventory available data, from where it is available, and how it may be used.

    If feasible, the committee may draw up a format (preferably tabular) to maintain uniformity in the collection and presentation of information.
3. The member in charge of each area may constitute a sub-committee to help with the work. For example there may be sub-committees for admissions, examinations, recruitment, curriculum development and so on. Each sub-committee collects data, organises it, and analyses it.

    If possible, it may draw conclusions about strong and weak points and suggest ways of strengthening the weak areas.
4. The steering committee meets at regular intervals to assess the progress being made by each sub-committee and to devise ways of getting past bottlenecks.

The periodic meetings would also help eliminate duplication and encourage information sharing.

5. When all the sub-committees have completed the tasks assigned to them the steering committee pools the information and deliberates on the best way to presenting it. The task of drafting the report is assigned to a member with language and presentation skills, preferably the co-ordinator. The report should be systematic, explicit and based on adequate documentation.
6. The draft report is circulated to a cross-section of every constituency of the institution for comments and suggestions.
7. The steering committee meets to deliberate the suggestions and to decide on the alterations required in the draft.
8. The report is written and scrutinised by the steering committee and finalised for submission to higher authorities in the university, who would send it to the NAAC.

It is advisable to draw up a schedule of meeting and the work to be completed between meetings. Though it may not always be possible to slick to the schedule rigidly it will nevertheless provide a time-frame to complete the self-study and periodic meetings will ensure a sense of direction and cohesion.

The time required for the entire process of preparing the self-study report may be three to four months.

An officer of the NAAC would be available for advice and assistance throughout the process of institutional self-study.

5. On-site visit

The institution will be informed about the composition of the on-site visit team by the NAAC. If the institution has any reservation about any member being on the team it may request a change, giving reasons, without suggesting alternatives.

The on-site visit team, comprised of persons of high repute in teaching, research,, finance, educational administration, professions and business, would visit the institution and deliberate with representatives of all its constituencies.

The report of the team along with the self-study report will be studied by the NAAC and, through interaction with the institution, discrepancies and gaps in information will be eliminated. All the information will be passed on to the Chairperson of the on-site visit team who, in consultation with other members, would submit the final report.

6. The outcome

The Executive Committee of the NAAC would review the report and give its recommendations. The General Council will take a final decision on accreditation of the institution. The Director, NAAC will communicate the decision to the institution.

Journal of Higher Education
Volume 19 No. 2 Summer 1996

NAAC Guidelines for the Setting up of Internal Quality Assurance Cell*

Contents

1. Introduction
2. Formation of the NAAC
3. Internal Quality Assurance Cell (IQAC)
4. Composition of IQAC
5. The Working of IQAC

1. Introduction

There is serious concern about quality in higher education. The academics feel that very little is done about quality in higher education and being the prime custodians of higher education they are the one who are more concerned about it. However, the other components of higher education namely students, parents, would be employers, funding agencies and society in general have serious concern and doubt about what is happening to higher education.

The higher education system in India has undergone phenomenal expansion in last 45 years. According to the latest University Grants Commission (UGC) statistics, there are 13 Central Universities, 151 State Universities, 36 Deemed to be Universities and 14 Institutions of National importance and also 8210 colleges affiliated to various universities and 110 autonomous colleges. About 2,86,000 teachers conduct academic programmes for 5 million plus students. The enrolment at the plus 3 level and beyond goes up at the rate of 4.5% each year. This phenomenal expansion of the system is an outcome of corrective measures to remedy demographic disparities in access to higher education. As a result much of the financial outlay, which is almost ten times what it was 45 years ago, goes towards keeping the system running with little to spare for new programmes of study. Financially unsustainable increase in enrolment and precipitous decline in quality make it imperative for the institutions of higher learning to ensure the relevance and quality of their programmes and products so that the system becomes capable of self-regulation and self-renewal.

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* More information on the Internal Quality Assurance Cell can be obtained from Director, National Assessment and Accreditation Council, Post Box No. 1075, Rajaji Nagar, Bangalore-560010.

The continuing concern that higher education does not respond sufficiently to changing needs and that there is a need for evaluation of performance in higher education, has initiated the establishment of an organisation like National Assessment and Accreditation Council [NAAC].

2. Formation of the NAAC

Section 12 of the UGC Act, 1956, enjoins the University Grants Commission to take all steps as it may think fit for the co-ordination and promotion of higher eduction and for determination and maintenance of standards of teaching, examination and research in the institutes of higher learning. National Policy of Education (NPE) 1986 and Programme of Action (POA) 1986 *inter alia* recommend that:

"Excellence of institutions of higher education is a function of many aspects: self-evaluation and self-improvement are important. If a mechanism is set up which will encourage self-assessment in institutions and also assessment and accreditation by a council...the quality process, participation, achievements etc. will be constantly monitored and improved."

In fulfilment of the above recommendations, in 1986 the UGC constituted a Committee to work on the approach and *modus operandi* for assessment and accreditation in higher education and its report was subsequently processed to a project document for establishment of a body to do these tasks.

These documents were deliberated in nine regional seminars held at the universities of Andhra, Annamalai, Guwahati, Kalyani, Lucknow, Mysore, Pune, Punjab and Rajasthan and finally at the National Seminar held at Jawaharlal Nehru University, New Delhi, as well as the Vice-Chancellors' Conference in Pune in 1994.

The UGC, in July 1994, constituted an empowered committee to finalise the Memorandum of Association and Rules and Regulations of the National Assessment and Accreditation Council (NAAC). The NAAC (under section 12ccc of the UGC Act of 1956) was registered under the Karnataka Societies Registration Act of 1960 and the Karnataka Societies Registration Rules of 1961 at Bangalore, on September 16, 1994.

The NAAC aspires (a) to play a catalytic role to achieve a well-functioning, diversified, self-sustaining and self-renewing system of higher education at all levels of teaching, learning and research so that it is equitable, efficient and high quality, and (b) to make the concept of accountability explicit, supportive and non-threatening.

The philosophy of the NAAC is ameliorative and enabling rather than punitive or judgmental, so that all constituencies of institutions of higher learning are empowered to maximise their resources, opportunities and capabilities.

The NAAC will assess and accredit either an academic programme or a set of activities or an institution as a whole. The process would be the same for any of these once they volunteer to be assessed and accredited. This process of assessment is going to be a guided rigorous self-examination to understand merits and limitations. The external evaluation by peers and practitioners of academics is to help to measure the institution's own performance. It is not to be compared with other institutions or with other teaching units, if the performance of a unit is being assessed. Thus the process of accreditation is expected to improve the quality of education.

The most important stage in the assessment and accreditation process is the preparation of a self-study report by the institution. Institutional self-study is primarily introspective and analytical. The NAAC's criteria of good practice under various parameters of assessment are given below.

Parameter I : Institutional Mission and Objectives

Criterion I.i: The objectives and mission of the institution are clearly stated, periodically reviewed, and communicated systematically to all its constituencies.

Criterion I.ii: The objectives and mission of the institution reflect contemporary educational needs and are relevant to the region it serves.

Parameter II : Curriculum Design and Review

Criterion II.i: The programmes of teaching and learning are consistent with the objectives and mission of the institution.

Criterion II.ii: The process of course/programme approval is designed to make the objectives, content, expected outcomes and weighting of different segments explicit.

Criterion II.iii: Feedback from students, employers and external peers is used by the institution in the review and re-designing of courses/ programmes.

Parameter III : Quality of Teaching and Learning

Criterion III.i: The programmes of teaching and learning offer a wide range of academic disciplines to train students to fulfil personal, societal and national needs.

Criterion III.ii: The programmes of teaching and learning harness advances in technology to encourage student initiative in learning.

Criterion III.iii: The evaluation procedures in the educational programmes are rigorous and fair.

Criterion III.iv: The evaluation methods test the knowledge and skills that specific programmes are designed to impart.

Criterion III.v: The regularity and the confidentiality of examinations are maintained and results are announced within reasonable time.

Criterion III.vi: The institution has qualified and adequate faculty to staff the programmes of teaching and learning.

Criterion III.vii: The institution has open and participative mechanisms for evaluation of teaching and work satisfaction.

Criterion III.viii: The faculty have opportunity for continued academic progress and professional advancement.

Parameter IV : Publications, Consultancy and Extension activities

Criterion IV.i: The institution has a vigorous and well-scrutinised publication programme and actively encourages faculty and students to publish in academic fora.

Criterion IV.ii: The faculty of the institution participate in and contribute to advances in knowledge through research and consultancy.

Criterion IV.iii: The institution is responsive to community needs and conducts relevant extension and awareness programmes.

Parameter V : Organisation and Governance

Criterion V.i: The administrative organisation of the institution is such that powers and responsibilities are clearly assigned to designated bodies and individuals.

Criterion V.ii: The organisation is designed to facilitate tasks related to every aspect of the institution's goals and every segment of its constituencies.

Criterion V.iii: The institution has a realistic academic calendar which is generally followed meticulously.

Criterion V.iv: The institution's offices and departments are governed on the principles of participation and transparency.

Criterion V.v: Management techniques and technologies are used, to the extent possible, for efficient running of every administrative and academic task.

Criterion V.vi: The administrative and academic units of the institution make optimal and innovative use of available facilities.

Criterion V.vii: Academic and administrative planning in the institution move hand in hand.

Criterion V.viii: The institution has effective mechanism to monitor the functioning and progress of its academic and administrative units.

Criterion V.ix: All affected constituencies of the institution have access to relevant information pertaining to their professional functions and welfare.

Parameter VI : Infrastructural Facilities

Criterion VI.i: The institution has adequate infrastructural facilities to run the educational programmes and administrative functions efficiently.

Criterion VI.ii: The growth and maintenance of the infrastructure keep pace with the academic growth of the institution.

Criterion VI.iii: The infrastructure ensures a clean and efficient environment.

Parameter VII : Support Systems

Criterion VII.i: The institution has sufficient and well run support systems to ensure the physical and intellectual health of all its constituencies.

Criterion VII.ii: The allocation of facilities is based on principles of fairness and encourages creative and optimal use.

Criterion VII.iii: There are fair and expeditious grievance redressal mechanisms at all levels of the institution's functioning.

Parameter VIII : Student Services

Criterion VIII.i: The institution's prospectus gives clear guidance to students about admission and completion requirements for all courses, the fee structure and refund policies, and student support services.

Criterion VIII.ii: Financial aid to students is well publicised and fairly distributed.

Criterion VIII.iii:The students of the institution have access to competent counselling and placement services.

Criterion VIII.iv:The students of the institution have adequate and equitable access to learning support systems and to the records of their performance.

Parameter IX : Sources, Adequacy and Management of Financial Resources

Criterion IX.i: The finances of the institution are judiciously allocated and effectively utilised to make its programmes and functioning cost-effective.

Criterion IX.ii: The budgeting and auditing procedures are regular and standardised.

Criterion IX.iii: The institution has imaginative and effective resource mobilisation and management strategies.

These parameters are self-explanatory and relate directly to the concept, functioning and effectiveness of Internal Quality Assurance Cell (IQAC).

3. Internal Quality Assurance Cell [IQAC]

Quality in higher education is a some what ambiguous term since it has connotations of both *standards* and *excellence*. Many a time Quality is used synonymously with Excellence. A clear distinction is needed between "standards", "excellence" and "quality". There is no shortage of literature on the subject and we give list of material for further reading at the end of this document. However, in general one can say that the quality in higher education embraces effectiveness, efficiency and accountability. The basic purpose of IQAC, therefore, is

- to ensure continuous improvement in the entire operations of the institution, and
- to assure everyone connected with higher education-namely students, parents, would be employers, funding agencies and society in general-about the institution's accountability for its own quality and probity.

This means IQAC will have to evolve mechanisms and procedures for ensuring

(a) timely, efficient and progressive performance of academic and administrative tasks

(b) the relevance and quality of the academic programmes

(c) the maximisation and integrity of teaching and learning opportunities

(d) the credibility of evaluation procedures, and

(e) the adequacy, maintenance and proper allocation of support structure and services.

4. Composition of IQAC

The composition of the IQAC will depend on the complexity of an institution's structure and programmes. The suggestions given here therefore indicate how best planning and monitoring needs to rest on cross-sectional involvement and responsibility without becoming cumbersome.

The following composition is suggested:

(1) Chairperson: Head of the institution

(2) Three senior recently retired teachers

(3) A few senior administrators

(4) One or two members from the management

(5) A few of the teachers, one of whom could be named as a Member-Secretary

While selecting these members several precautions and care need to be taken. We list a few of them below:

- In case of retired senior teachers it could be seen that there is representative of each of the faculty that institution deals with. In addition, it would be advisable to choose such teachers who have earned respect for the integrity and excellence of their teaching and research. Moreover they should be aware of ground realities of the institutional environment and are committed to improving the quality of teaching and learning.
- In case of senior administrators it would be appropriate to choose persons in charge of institutional services such as library, computer, estate, students' welfare etc. In addition, functionaries incharge of admissions, academic tasks, examination, planning development etc. need to be included in the team.

- Management representatives should also be persons who are aware of institution's objectives, limitations and strengths and are committed to improvement.
- The criteria referred to senior retired teachers also hold good for the teachers in service. Indeed, they should be able to carry the operational responsibilities of mobilising institutional awareness and to commit time for working out the procedural details. One of them needs to spend more time and such a person could be named as a Member-Secretary.

5. The working of IQAC

The quality assurance comes as a by-product of the on-going efforts to define objectives of the institution, having a work plan to attain them and to specify the checks and balances to evaluate the degree of attainment in each of the tasks. Hence commitment to improve rather than institutional control is the basis of assessment and in devising procedures and instruments the right balance between individual growth and institutional health has to be struck. The IQAC should ensure that whatever we do in the institution for "education" is done without much errors and with efficiency and effectiveness aimed at self-defined standards. This means IQAC has to establish modalities and procedures to gain information on the parameters mentioned in section 2. All this is necessary for evolving a strategy for monitoring and improving the performance of the institution in totality. IQAC has, therefore, to workout the work-plan to collect information which reflects a clear understanding of responsibility of each of the "element" of the system and the context as well. In fact feedback needs to be made an intrinsic self-generated part of the information flow to monitor work-in-progress. The evidence and documents need to be generated such that all those about whose activities feedback is sought - students, teachers, administrators- should also have the opportunity to provide their own feedback on others. It must be remembered that evaluation enhances the importance of that which is evaluated.

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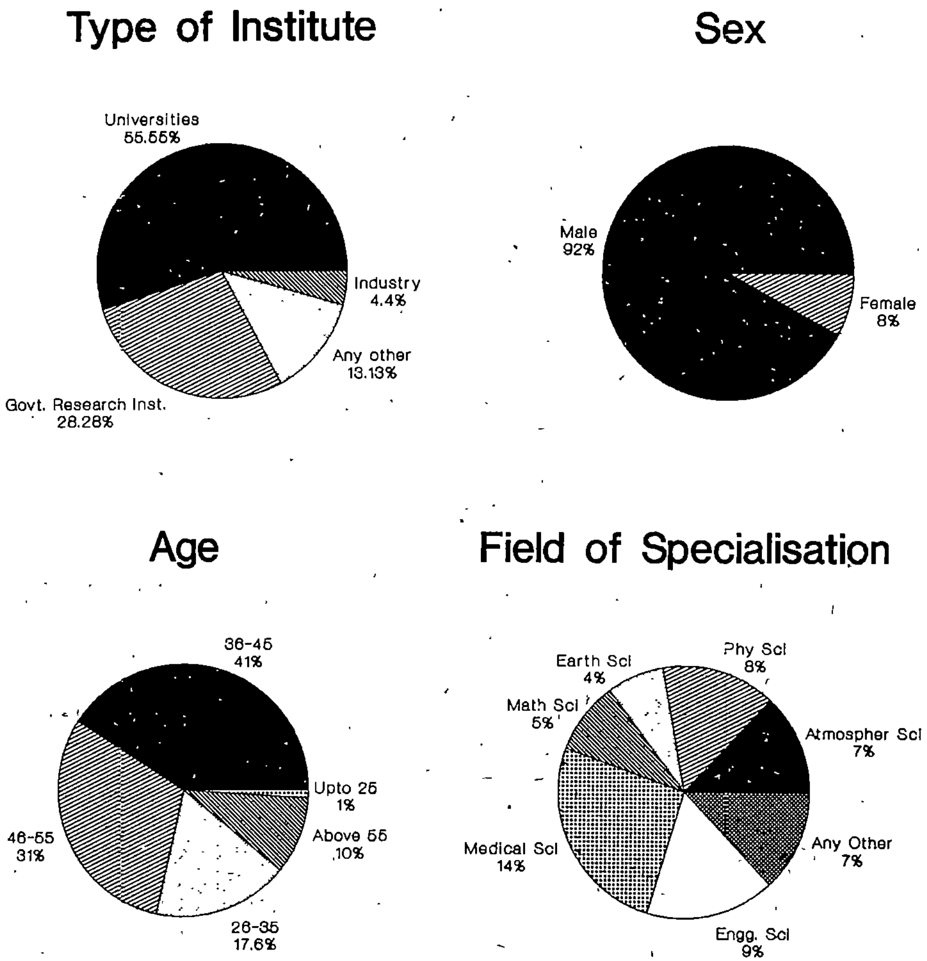
Correction to the Article 'Image of Indian Science and Scientific Community' *by S. Pruthi and Ashok Jain, published in Journal of Higher Education, Volume 19 No. 1 Spring 1996 (ps 9-30).*

It is regretted that due to a printing mistake Figures 1 and 3 in the above article are incomplete. The following is the correct presentation of these figures.


Type of Institute

Sex

Age

Field of Specialisation

Fig. 1 : Respondents' characteristics.

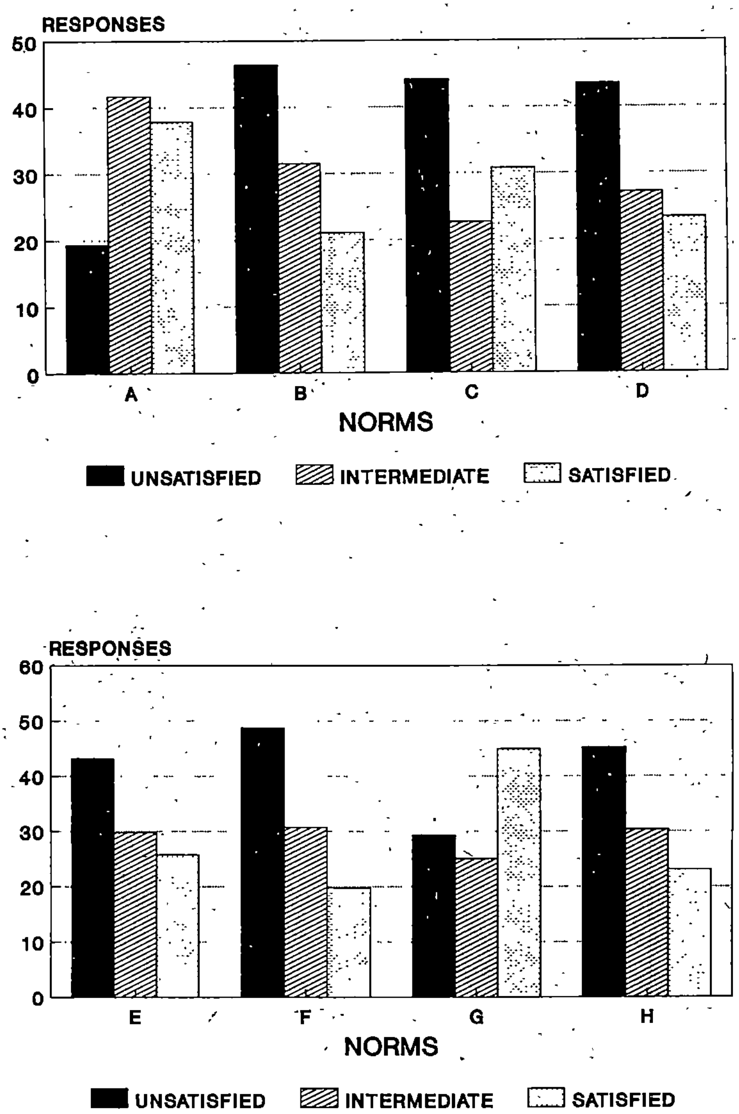


Fig. 3 : Respondents' Frequency for Norms Followed by Scientific Community Pursuing Research.

(A=Authority of data; B=Credit to junior colleagues; C=Discussion with immediate colleagues; D=Discussion of research problems outside institute; E=Evaluation of research on merit; F=Research work on original ideas; G=Hesitate to criticise each other's work; H=Tolerance to criticism.)

Journal of Higher Education
Volume 19 No. 2 Summer 1996

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Editorial

Recently we spent some time with the heads of a few apex bodies concerned with higher education to find out how they were perceiving the challenges arising from a society perpetually in the throes of change.

There is no doubt that they are all concerned with the problem of coping with the transformation being spearheaded by the rapidly expanding horizons of new knowledge, the evolution of new tasks arising from new technologies, the myriad functions being performed with computers and, above all, the ever increasing information and communication facilities.

It is widely recognized that time and tide will wait for no one. Even if the managers of the system of higher education in India sit back and do nothing, events in other countries and the pressures generated by global competition, will force the indigenous and overseas entrepreneurs, exporters, management personnel, investors etc. to thrust new tasks and systems on educational enterprises. Thus, radical changes, whether by deliberate design or under circumstantial imperatives, are inevitable. If we have the wisdom to anticipate these events, we will be able to take steps to evolve new systems which would meet the emerging needs and yet retain the more valuable features of the existing systems. Otherwise, the whirlwind of technology-driven, all-embracing and irresistible changes will, sooner or later, sweep away whatever comes in its way.

A few days back, in a casual conversation, an enlightened observer was recounting the changes which have taken place in the office systems of universities as well as the UGC. Ten years back, very few offices had electronic typewriters. Suddenly these typewriters became the rage. Then came photo-copiers. Now plain-paper black and white photocopiers are status symbols for anyone who wishes to be counted as somebody. Even though cyclostyling is much cheaper, very seldom does anyone resort to it. Most of the machines are out of order. Around the mid-eighties, some people decided that every senior official must have a personal computer.

Whether they wanted these or not, their rooms were decorated with these. What happened to these would make an engaging story of colossal waste by a proverbially penny-pinching system, occasioned by mid-summer madness somewhere at the top. Now-a-days we can see laser printers and colour photocopiers making their appearance in high profile establishments on the official scene.

Ten years back even telexes were rare. Now, telexes, even if they are still there, are more often than not, out of order. Nobody really knows why these have been replaced by FAX machines. However, faxes too are being overtaken by E-mail and all kinds of cybernets. In less than two years Internet has become a powerful and increasingly pervasive tool for garnering and exchanging information and keeping in touch with world events and trends. Tele-conferencing or inter-active multi-media satellite based communications are multiplying at such a fast rate that these have ceased to be news.

It is high time we ask as to what has been the positive contribution of all this gadgetry? Do things get done more quickly and more efficiently? Are decisions more data-based? Is the citizen able to get a better or quicker response from the decision-makers?

Whatever be the answers to the above questions, we can say that now a days no one can or needs to plough a lone furrow any more. Libraries all over the globe can be and indeed have to be linked to each other and curricula can and has to be formulated keeping in mind what is happening elsewhere.

Already, institutions from across the continents are invading the educational environment in India and some Indian institutions too are venturing abroad in collaborative enterprises. What is more, an increasing number of Indian institutions, such as JNU, Delhi University, Manipal University etc. have entered into collaborative arrangement with foreign universities for carrying on graduate and post-graduate programmes on the basis of shared curricula and teaching programmes.

As a leading academician puts it, change now is a *continuous* process. We do not know how long what is new today will retain its novelty. It seems that many of the ideas which appear innovative today will become out of date within a decade or less. In such a scenario of transitional reality, the most important task confronting the leaders and the administrators in the education systems consists of creating an environment and a new paradigm for managing a continuous process of change. In such a challenging change-oriented environment, nobody can lay a claim to the monopoly of wisdom. Authority and dogmatism have to give place to curiosity, humility and malleability. Functional experience and insight rather than hierarchical status has to be brought into play in an interrogative mode to determine what can or should be done in a given situation.

One of the implications of this would be that people with less impressive pay packets and designations would also acquire the right to ask searching questions from their ''superiors'' who, above all, must accept the obligation to share information with everybody. All those who believe that answering questions is a waste of time belong to the waste paper baskets. Those responsible for postings, transfers or sanctions must be made to answer, fairly frequently, as to why things are timelessly adrift. Above all else, we must set up system meant to calculate the costs of delay in decision-making. It would be recalled that a reference was made specifically to this problem in para 4.55 of the *Challenge of Education* brought out by the Ministry of Education in 1985. We must reorganise our systems in such a manner that those in authority will feel sheepish about saying they do not have, or are unwilling to share, information with their colleagues, and more particularly with those affected by their pusillanimity. Transparency is no longer a pious platitude. Since everything is becoming increasingly interdependent, the right to information, like the right to representation, must be accepted as inviolable.

The age old argument over relative power and status between the administrative and the technical or professional personnel has to be resolved immediately to evolve an appropriate change-oriented culture for educational organizations. In institutions concerned with the generation and dissemination of knowledge, possession of knowledge and the capability of its gainful and effective use must become the basis of power. To make this happen, everybody, whether in government or in the universities and research laboratories or in the mighty citadels of policy-making will have to be re-educated. In such an environment, administrators will have to learn to function as service personnel or facilitators. Of course, they will have to call others to account from time to time, but, ever so often, they too would be called to account, not only by outsiders but also by their task-driven colleagues and subordinates. It is elementary that bureaucracies exist not only in the portals of secretariats; these, sometimes in their most rigid and disabling form, exist also in expert bodies, universities, laboratories and even in trade unions.

Some institutions have an interesting system for counteracting immobility, facilitating the evaluation of ongoing activities and also generating synergetic pressure for reorganization and reorientation. Here, some experienced, task-oriented people with a stake in the future of the institution, even though they are not in power, are organized every three or four years into Review Committees to look at the totality of the organization in consultation with any insiders or outsiders they wish to co-opt. When they come out with their report, it is widely discussed, formally and informally, by different faculties and interest groups. Thereafter, it is considered by the people at the apex level. These people at the apex level, usually members of the governing body, then take appropriate decisions for reorganising and reorienting the institution, stating where they agree with the Review Committee (and why) and also what they cannot accept (and why).

One of the views expressed by a Review Committee of one of the premier institutions in India was that an institution's well-being and capacity to respond to the changing scenario can be assessed these days, albeit indirectly, by : (a) how quickly it acquires new tools and equipment; (b) what is the utilization factor of these; (c) how many of these become obsolete even before these have rendered 50% of the performance norms laid down by the fabricators; and (d) whether the arrangements for maintenance are in keeping with the nature of equipment. It has been found that there are many institutions which have acquired the latest models of computers but whose arrangements for repair and maintenance are so primitive that some of these remain out of order not only for weeks, but even for months! This happens essentially because trying to employ highly sophisticated 21st century technologies through an administration with the mind set of the 19th century.

Of course, the real indicator of well-being identified was the degree of synergy, generated within an organization. If some institution has fifty Ph.D's under one roof but no self-generated initiatives, it has to be considered dead as a dodo.

* * *

For quite some time, assessment and accreditation have acquired currency as the new buzzwords to which everybody in higher education has to swear unreserved loyalty and allegiance.

In this issue, we are presenting the results of a study undertaken by the A.I.I.M.S. on the relative quality of medical institutions for undergraduate education basically to underline some fairly obvious issues. Firstly, it is obvious that even an Assessment and Accreditation Organization has to be re-evaluated from time to time. In spite of M.C.I's claim of having established a strict and vigilant regime for assessment and accreditation, many institutions have for decades been getting away with a very low level of performance. Most of these are colleges which, in the first place, should not have been recognised because their bonafides were questionable and their avowed objectives were based on false premises. Secondly, one cannot help asking as to whether the Medical Council of India and the Ministry of Health would initiate an open debate on the findings of the study : (a) to confirm or deny the validity of the conclusions presented by the AIIMS study ; (b) to initiate special measures to watch over badly performing colleges; and (c) to review the procedures for accreditation to determine whether these need revision, reorientation or procedural restructuring.

When we learnt about the outcomes of the AIIMS study, we thought it would cause a terrible furore inside and outside the parliament. Sadly, nothing of the sort has happened. While the press and the parliament are playing possum over this report, the vigilantes of public welfare are too busy with the now routine furores over new scams and new scamsters.

If this is the state of unconcern about an evaluation report so frankly critical about the functioning of medical colleges, what hope can there be of the reports of the UGC sponsored National Assessment and Accreditation Council attracting greater attention?

In this connection, it seems worthwhile recalling that the Constitution of India laid down that the Government of India would, under Seventh Schedule 'List I' Item 66, be responsible for the coordination and determination of standards in institution for higher education. This task was later assigned to the University Grants Commission. However, because of its inability to perform these tasks, the UGC has, on 15 September, 1994, established the National Assessment and Accreditation Council to assess and accredit those institutions of higher education which approach it for this purpose on their own initiative. It is a rather unfortunate fact that in the last two and a half years, almost no institution has applied for obtaining NAAC's assessment and accreditation.

Everybody is waiting with bated breath for further developments. Will institutions come up on their own accord, paying out the fees from their coffers, for NAAC's accreditation or will they have to be pushed from the backdoor, by the government, the UGC or other funding institutions into the arms of NAAC ? One fervently hopes that NAAC will somehow manage to become operational by itself either by convincing the employers to ask for its certification while considering candidates coming up for recruitment or by a dynamic campaign to demonstrate the beneficial effects of associating with NAAC.

* * *

Notwithstanding the hitherto indifferent performance of NAAC, there is no denying that at least for the 'Government recognised' educational institutions, such a council exists by itself and also as a hand-maiden to the UGC.

Now-a-days many of the people watching over the progress of NAAC are also asking as to what mechanism(s) exists :

(a) to document as to how so many institutions of various kinds and categories covered by the broad rubric of knowledge or training industry have come up, as central, affiliated or franchised units;

(b) to inquire as to what courses of what quality (and in what manner) they are running; and

(c) what are they delivering, individually and collectively, in comparison with what they are offering through their highly aggressive, all-pervasive and devastatingly attractive advertisement programmes, costing crores of rupees.

When one talks to the entrepreneurs running the training industry empires, one hears fairly lurid stories about sharp practices, break-down of systems as one goes down the ladder to small towns, much touted associations with foreign institutions with doubtful antecedents; and inflated assurances of highly paid jobs at home and abroad. One wonders whether the ethics and performance of these purveyors of training (offering a certificate or a diploma at the end) is or should be anybody's concern.

Isn't it necessary that by a suitable legislation, all the training industry enterprises should be obliged at least to register themselves at a designated address on the Internet and provide inter-active information on relevant parameters about objectives, standards, contents, curricula, lesson plans, reading materials, delivery mechanisms, linkages with other institutions, arrangements for supervision and monitoring and the reliability of appraisal, certification, placement services etc.

Training industry in India has reached dimensions which we can not and must not ignore. One gets the impression that, perhaps, it is catering to many more people than those benefiting from the network of either the polytechnics or the UGC sponsored vocational courses at the undergraduate level. Many people feel, therefore, that there is, perhaps, a great deal to be learnt from this ever expanding area of entrepreneurship. Thus, for this, as well as a variety of other compelling reasons, we have to find out as to what is going on, not to control the process or to impose suffocating patterns of uniformity upon it, but simply to keep track of it, to learn as much as we can from it and also make sure that it is delivering what it is offering, to the participants.

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CONTENTS

JACOB AIKARA: Inequality of Educational Opportunities 1
P.R. PANCHAMUKHI: University Finances in India 15
P.V. INDIRESAN: Education for Development in the Twenty-first Century 25
C. UPENDRANADH: International Aid to Basic Needs and Education for All 35

Research Notes/Communications

ATMA RAM: Toning up Centres of Higher Learning 51
SURESH MISRA: Management of Education by Local Governments 55

Book Reviews 63

K.C. NAUTIYAL: Sixth All-India Educational Survey (NCERT); V. LOGANATHAN: Finding Funding (E.W. Brewer et al); R.P. SINGH Images of School (S B. Bacharach & B Mundell); DISHA NAWANI: Educational Development Among Tribes (K. Sujatha); S.K. MALLIK: Panchayati Raj in India (A. Bajpai M.S. Verma); B.K. PANDA: Teacher Education and the Teacher (L.C. Singh P.C. Sharma); K. SUJATHA: Tribal Administration and Development (S.G. Deogaonkar); SUSHILA SINGHAL: School Evaluation (M.S. Khan); A RAJAGOPALA RAO: HRD in the New Economic Environment (eds. T.V. Rao et al); S.M.I.A. ZAIDI: Authentic Assessment (C.F. Fischer R.M. King); P. ARUMUGAM: Measuring Up (G.N. Gaither et al); JANDHYALA B.G. TILAK: Uneven Development in the Third World (A.S. Bhalla)

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W(h)ither Language Equality?

KAILASH S. AGGARWAL

Introduction

In common parlance as well as in scholarly debates, the speech forms and verbal communication patterns of the tribal, poor and backward communities, castes and groups in India have, more often than not, been referred to as *dialects* as opposed to *languages*. It has also been quite widely observed that the notion of 'dialect' connects an inferior status – dialects are depreciated as speech forms that are inadequate, lacking in linguistic, cognitive and aesthetic properties. Many of them have been referred to as 'primitive' — possessing simple grammars, a few speech sounds and vocabularies of a few hundred words only – whose speakers have to use bodily and facial gestures to compensate for their linguistic deficiencies. They are also denigraded as not logical, not expressive and so on.

All this is particularly disturbing since we have had more than four decades of linguistics in post-independence India. During this period, departments and centres of advanced studies of linguistics, specialized institutes of language studies and scores of great language experts and towering scholars in the field - all have burgeoned. At the same time, biases and prejudices against tribal languages and local vernaculars, such as that 'they are dialects' ; 'they are primitive' ; 'they are not sweet'; and many more have mushroomed. Even men and women of letters claim that their own language is sweeter, better and more precise than that of others, that the local speech is a corruption of the written language, that there is such a thing as a 'pure' language which needs to be protected from colloquial expressions and slangs and that only the 'pure' language should be used in literature. Further, it is also believed that there are developed and undeveloped language, that developed countries and states have developed languages and, in the Indian context, language derived from Sanskrit are richer, linguistically as well as aesthetically, than the rest of the languages spoken in India. All these misleading notions about language have created enormous confusion and compounded the complexity of the problems faced by the speakers of tribal and minority languages. Not surprisingly, even scholars who seem to have a fairly good understanding of issues related to the development of these oppressed and marginalised sections of peoples have been susceptible to these confusions, biases and prejudices.

The two most important arguments advanced to justify these prejudices are that these 'dialects' do not have *scripts* of their own and that they do not possess any *rich literary tradition.* As we shall see in the following sections, such and similar notions about the languages of tribal and minority communities have no scientific, theoretical or linguistic basis whatsoever. They are in fact part of the general prejudicial understanding of these peoples living on the fringes of Indian society in general. For example, with regard to religion it has been fallaciously held that tribal religions represent some kind of animism and that tribal and non-tribal religions have to be placed in an evolutionary sequence of higher and lower. In fact, the biases related to language can and have been extended to other spheres since a language can and have been extended to other spheres since a language, besides being a vehicle of communication, is also a politico-cultural institution which is an integral part of the social, emotional, economic and intellectual life of its speakers. Thus, though the speakers of these languages form the core basis of material and, often intellectual, production in the society, they have suffered from the biases and prejudices about their languages, cultures, social traits and life styles held and advanced, purposely or out of ignorance, by those who are not engaged in material production, nor even in the generation of knowledge for material production.

The overbearing effect of all this has been that the minority languages have suffered tremendously in terms of social, educational, and administrative status are prestige; and in fact, from contempt, condemnation and discrimination by the State and its managers, ultimately leading to the denial of the basic right to mother tongue for the speakers of these languages. The roots of such a denial lie in a history of subjugation and of social, culture, political and economic exploitation, of dominance and oppression by the rulers from among the speakers of the legitimatized, majority and powerful languages. The minority communities have been subjected to great and relentless pressure to assimilate themselves to the majority, the dominant and the powerful - the MAINSTREAM. In fact, the virus has been so endemic and the conditioning so long-term that even the minority speakers themselves see their own languages and cultures through the coloured glasses of the assimilationists. It has led them to believe that their languages are in fact dialects, not 'full fledged' languages, that they are poorer, disrespectful and so on, ultimately leading to a loss of self-respect and self-image.

The Notion of Language Equality

India has often been referred to as a 'sociolinguistic giant' because of the great multiplicity of languages spoken by different peoples within its territory. In fact, in each sociolinguistic setting several languages exist and are used simultaneously. These languages may be in the form of a standard language and its dialects, a national, official or regional language, and a host of minority languages of immigrants and of different ethnic, tribal and caste groups. The existence of a vast number of languages and language varieties with differential status and power positions, formal properties and functional distribution naturally brings into focus the question of language equality. We may approach this question from two angles; *theoretical* and *actual.*

Theoretical

Theoretically, recent studies in sociolinguistics and sociology of language have established beyond any shred of doubt that value judgements about ethnolinguistic minorities have no scientific, linguistic foundations. All languages equally meet the communicative, social, psychological and all other needs of their speakers, are equal treasures of valuable and vital information about human nature, history and society. In fact, there are no 'bronze age' or 'stone age' languages nor have any language types been discovered which may correlate with the recognized anthropological categories as pastoral, nomadic etc., Judgements on counts such as inadequacy, inferior quality, lack of a grammatical system, absence of script and written literature, illogically and so on and so forth are a function of social, economic, political, cultural and *not linguistic*, factors. They have absolutely nothing to do with the inherent properties of the languages so maligned. "All languages have a complex grammar; there may be relative simplicity in one aspect (e.g. no word endings), but there always seems to be relative complexity in another (e.g. word position). People some times think of languages such as English as 'having little grammar' because there are few word endings. But this is once again "the unfortunate influence of Latin, which makes us think of complexity in terms of inflectional system of that language." (Crystal 1987; 6). It is also usually thought that a language with simple and regular grammatical features is an inherently superior language. However, no human language is totally simple and regular. Every language has an intricate system of grammatical rules, and it also has exception to those rules. On the whole, there is no framework or set of criteria and principles to rank the overall grammatical and expressive richness of languages in an evolutionary continuum (cf. Ferguson, 1968). Unfortunately, value judgements referred to above have biased and prejudiced popular as well as scholarly perceptions of different ethnolinguistic minorities in India.

As a matter of fact, many of the views held for the tribal languages in India are similar to those held about Black English (BE), the language of the Blacks in America. For nearly five hundred years, the oral communication patterns of Black Americans were considered sub-standard, corrupt, ungrammatical, illogical, sloppy and the like. It was believed that the Blacks could not master Standard American English (SAE) because of genetic inferiority (cf. Labov 1972). This bias led to the misguided conclusion that the primary reason for the lack of social and economic mobility of the Blackmen in America was their inability to speak SAE. The Civil Rights Movement of the Blacks in America in the 60s, however, led to two significant developments. One was that the U.S. Administration had to abandon the *melting pot* metaphor, the model of assimilation, and switch over to that of the *salad bowl,* the model of pluralism, at least at the official policy level (cf. Aggarwal 1990a) . That pluralism has not been practised in its true sense has been argued by several scholars (cf. Edwards 1985). The other development was that a number of linguists, mostly whites though, recognized the legitimacy and equality of BE, on the basis of a vast amount of empirical evidence. BE came to be accepted as a rule-governed, highly developed and complex linguistic system that satisfied all the basic requirements in terms of communicability, consistency and predictability. At least in the academic constituency, it was accepted that SAE was no better than BE.

Such sociolinguistic research on BE and many other minority and powerless languages all over the globe led to the theoretical proposition that all languages are equal. This theoretical stand point has been based on the following three principles :

1. All languages are structured, rule-governed and systematic – every language is a network of system.
2. Every community has its own language system. Even those communities considered in a comparative sense as 'primitive', 'aboriginal', 'uncivilized' and the like have fully developed language systems.
3. Spoken language is primary and written secondary – there are several hundreds of languages without a written form but there is no natural written language without a spoken form. The implication is that the presence or absence of a script is no criterion at all to evaluate and rank languages. (cf. Aggarwal 1990b).

Additionally, modern linguistics and sociolinguistics research is based on the promise that the concept of language refers to an abstract system. What really exists is a dialect. And there are three major dimensions of dialects :

1. Every dialect has a structured grammatical system, i.e. every dialect is a language system in itself.
2. Languages differ from each other systematically.
3. There are historical and cultural reasons for dialect differences." (ibid : 38).

On the basis of these theoretical developments has developed the notion of language equality. When we say all languages are equal, what we imply is the potentiality every language has for the expression of ideas and concepts indigenous to a speech community as well as its potentiality for development. This is no way, however, to deny the possibility of linguistic differences that correlate with socio-cultural, political, economic and technological features, even though such differences have not been systematically documented and researched into Thus there is no objective evidence to suggest that the so-called primitive peoples are in any sense encumbered by their languages, particularly when they are participating within the communication field of their own community. In due course of time, given the right opportunities and circumstances, all language systems can equally develop as adequate, vital and vibrant media for education, administration, science and technology, art and literature and for international communication. If the native speakers of a language make demands on their mother tongue it will never fail them. It will stretch itself, beg or borrow, but it will develop its structural complexity, expand its vocabulary, and satisfy all the communicative needs of the community and people concerned.

At the other end of the scale, we are confronted with opinions about the divinely superior and dominant language. For centuries, Latin and Greek served as linguistic models of excellene in Western Europe because of the 'great' literatures and philosophical thought contained in these languages. In fact, even the study of modern languages is still based on the grammars of these languages, in the practices of generations of classical as well as modern linguistic scholars and grammarians.

That one's own language is superior to all others is another popular notion, though the grounds on which the notion of superiority and excellence is based varies greatly. Some consider their language the *oldest*, while others argue theirs to be the *most logical* and *scientific*; some believe their mother tongue to be the *language of the god* and others think theirs being simply the *easiest to pronounce* or the *best for singing*. Arabic speakers, for example, feel that their classical language is the most beautiful and logical with an incomparable grammatical symmetry and lexical richness. Classical Arabic is strongly identified with religion and, as the language of the Quran, is held to provide miraculous evidence of the truth of Islam. On this premise, it is also believed that as God chose Arabic as the vehicle of his 'revelation' to his Prophet. It is the language used in 'heaven', and thus must be superior to all others.

Such a belief is not unique to classical Arabic and its speakers. Almost similar arguments have been advanced by speakers of several other languages. Sanskrit and classical Hebrew are great contenders, especially about claims as to which language is the oldest. Additionally, protagonists of Sanskrit claim it to be the most 'scientific' of all languages in the world, thanks to the interest some American linguistic evaluations reflect the sociopolitical situations of the times. Charles V of Germany (1518-1558) is said to have spoken in French to men, Italian to women, Spanish to God, and German to horses. In fact, in spite of all the proclaimed and real developments in linguistic sciences in the Western world, the general, popular and scholarly opinion about languages spoken in the East have hardly changed. For example, in 1985, the U.S. Department of Education listed 169 languages which the American Administration considered 'critical', in terms of security interests of a national and economic kind. "The aim, supported by special funding, was to help counter what the *Washington Post* called a nation's language illiteracy" (Crystal 1987 : 342). This list included Indian scripts like Assamese, Bengali, Gujrati, Hindi, Kannada, Kashmiri, Maithili, Malayalam, Manipuri, Marathi, Mundari, Nepali, Oriya, Punjabi, Sindhi, Tamil, Telugu, Urdu and many others. It is interesting to note that in the Indian context these languages claim 'great traditions' as well as superiority and excellence *vis-a-vis* the minority – tribal languages.

Not only that such notions and evaluations are theoretically unfounded, they also lack empirical evidence. Though it is widely believed that there are primitive languages and that speakers of these languages exist, scholars have so far failed in locating such languages and such speakers. And yet, there has been a great deal of speculation about where do they live and what specific communication problems they might be faced with and if they use non-verbal forms of communication and bodily gestures, then what do they do during the night! Without conceptual and abstract terms, how could they develop moral and religions beliefs and customs? All these questions remain not only unanswered but unaddressed. We may simply look forward to an explorer who would discover a truly primitive language. But, such explorations may prove utterly futile. The crux of the matter is that irrespective of its being 'backward', 'primitive' or 'uncivilized' in narrow cultural terms, and that too within the framework of the investigator involved, ever society which has been investigated has demonstrated the use of a fully developed language, with complexity and systematicity comparable to the language of the so-called developed nations.

All in all, in principle, all languages are equal, in terms of structural systematicity, communicative efficiency and development potentiality (Srivastava 1978). In specific societies, however, "no two languages are equal, i.e. no two languages have the same number of speakers, the same functional role, the same prestige, the same power . . . . " (Gupta 1987 : 1). The facts of life and society stand in sharp contrast to theoretical positions. "Only before god and the linguists are all languages equal. Everyone knows that you can go farther with some languages than you can do with others" (Mackey 1978 : 7).

In fact, even theoretically, the condescending attitudes in some pluralistic models have to be put to question : "In the 70s, many black scholars noted and rejected the passive position in which they were placed during the earlier analysis of black communication. They charged that the black people were only superficially gathered as data collectors in areas where white researchers would have faced difficulty. But when it came to analysis and developing a model of black English, white intellectuals avoided black intellectuals. They further explained that given the facts of culture differences, culturally different enquiries necessarily produced culturally different results. More often than not, incorrect conclusions were drawn, whether innocently or purposely, by theorists who were only familiar with the surface culture of the black language" (Aggarwal 1990b : 43). There is no doubt about the fact that these 'black scholars have responded to the political realities that nurture negative attitudes to BE. They have simply asserted their right to lingua-cultural self-determination. We shall return to this question later. Here, it is our hunch that the predicament of tribals, dalits, backward castes and other ethno-linguistic minorities in India is similar. If not identical, to that of the blacks in America.

Actual

To complete the picture, the question of language equality must also be addressed from the standpoint of the actual positions that different languages hold in particular sociolinguistic settings. Such an analysis will bring into focus not only the striking hiatus between theory and reality but also the vacuity of theory. Having examined the notion of language equality on the basis of four factors, viz, (a) judicial/constitutional status; (b) demographic configurations; (c) functional load; and (d) prestige and power, Gupta (1987) comes to the conclusion that the picture that emerges is "a picture of inequality rather than equality" (P.6). Gupta further asserts; " . . . and this is so despite the fact that we have considered only the so-called major languages to the total exclusion of several hundred other languages. To conclude, we would like to mention that one of the cardinal principles of justice is that justice must not only be done but also appear to be done. Transferring this to the language scene in India, one can say equality has not been accorded to languages, not does it appear to have been done" (1987 : 6). If this be the actual relative position among the majority, dominant languages, i.e. the languages included in the Eighth Schedule of the Constitution of India, one can very well visualise what must be the position of the languages of the ethnic minorities among themselves, and, more consequentially, vis-a-vis the scheduled languages.

It has already been pointed out that the actuality of language equality has no basis in linguistic theory. If some languages have become more useful, more powerful and thereby superior to others in a society, at a given point of history, the factors responsible can be located in the pre-eminent socio-economic, cultural and political status of the speakers in specific space and time, and not in any intrinsic or inherent linguistic feature. There is no way to rate the richness or poverty of language in terms of linguistic facts. "And it is no less difficult to arrive at an evaluation to aesthetic, philosophical, literary, religious or cultural terms. How, ultimately, could we compare the merits of Latin and Greek with the proverbial wisdom of Chinese, the extensive oral literature of the Polynesian islands, and the depth of scientific knowledge which has been expressed in English?" (Crystal 1987 : 7).

In fact, questions of language superiority and evaluation exercised peoples' mind during the 18th and 19th centuries with the rise of nationalism and national identity, and later national chauvinism. For example, *Johann Gottlieb Fichte* (1762-1814) praised the German language and dismissed the rest of the languages spoken in the world. In his famous 'Addresses to the German Nation' (1807), Fichte went to the bizarre extent of claiming that the native German speaker can always be superior to the foreigner and understand him fully, even better than the foreigner understands himself. Similar claims were made for French and Spanish. Thomas S. Macaulay (1800-59) argued in his *Minutes on Education* (1835) in favour of English for it to have been the *creme de la creme* of all languages in the world. Contemptuously referring to the languages of India, Macaulay wrote that English "stands pre-eminent even among the languages of the west . . . . it may safely be said that the literature now extant in that language is of greater value than all the literature which three hundred years ago was extent in all languages of the world together" (ibid).

Holding on to such dogmas, most modern states, France being the classic case, pursued a policy of assimilation and the imposition of one official/national language, usually the legitimized language of the dominant elite, upon diverse ethno-linguistic populations. More often than not, this resulted in the devalorisation and even the elimination of minority languages. In India, in its obsession with Euro-centric models, fixation for national unity and integrity, the Central Government has followed, not always with success, the same crude policy of assimilation. In fact, while in the past all the people living in the Indian sub-continent had been the 'white man's burden', in post-independent India, most of the ethnolinguistic minorities have become the 'brown man's burden'. And the brownmen occupying the centralised monolithic seats of governance, though sometimes paying lip-service to pluralism, have, by and large, used the state apparatus to force the diverse peoples inhabiting the country towards a conceited and unfeasible uniformity.

If we critically examine the profession of linguistic pluralism by the constitutional provisions, we find that they have not been taken to logical conclusion; rather, most of them have been undermined. The specific provisions contained in the Constitution of India are to be found in Part XVII of the Constitution, entitled 'Official Language'. These provisions, Articles 343 to 351, are organised in four Chapters ; Chapter I, 'Language of the Union' (Articles 343, 344) ; Chapter II, 'Regional Languages' (Articles 341-347); Chapter III, 'Language of the Supreme Court, High Courts, etc. ' (Article 348, 349) and Chapter IV 'Special Directives' (Articles 350, 351). The Eighth Schedule the Constitution has been appended to the Articles 344 (1) and 351. Besides, the Constitution (Seventh Amendment) Act, 1956, the Constitution (Twenty- first Amendment) Act, 1967 and the Constitution (Seventy-first Amendment) Act, 1992 are relevant to the issue under consideration. Additionally, the Preamble to the Constitution, though not enforceable in a court of law, provides a brief resolution on the perspective.

More concretely, the Constitution guarantees the following cultural and educational fundamental rights. Article 20 guarantees the right of any section of the citizens to preserve its "distinctive language, script or culture". Article 30 further guarantees the right of all minorities, "whether based on religion or language", to establish and administer educational institutions, with the additional safeguard that the state shall not, in granting aid to educational institutions, discriminate against any religious or language minority.

It clearly emerges from an examination from an examination of the specific language provisions that the constitution makers were almost obsessively concerned with the role of English in Independent India. The problem was to identify the "official language" of the Union. Hindi in Devanagari script was prescribed as the "official language" of the Union, subject to the continuance of English for official purposes" for a limited period of fifteen years from the commencement of the Constitution (Article

343). Article 345 clearly allows the Legislature of a state to adopt any one or more languages in use in the state (or Hindi) as the language or languages to be used for all or any of the "official purposes" of that state in place of English. Further, by Article 347, the President is authorized to direct the use of a particular language to be also "officially recognised" throughout a particular state or any part of it for such purpose as he may specify on being satisfied that a "substantial" part of the population of the state desires the language spoken by it to be recognised by the state.

The 'Special Directives' (Article 350) clearly states that every person shall be entitled to submit a representation for the redress of any grievance to any authority of the Union or a State in any of the languages "used" in the Union or the state. Articles 350A and 350B, inserted by the Constitution (Seventh Amendment) Act, 1956, direct that adequate facilities shall be provided for instruction in the mother tongue at the primary stage of instruction to children belonging to "linguistic minority groups", and also that there shall be a Special Officer for linguistic minorities to be appointed by the President who will investigate all matters relating to the safeguard provided for linguistic minorities under the Constitution. Finally, Article 351 provides that "it shall be the duty of the Union to promote the spread of the Hindi language and to secure its enrichment by assimilating, without interfering with its genius, the forms, style and expressions used in Hindustani ; and in the other "languages of India" specified in the Eighth Schedule, and by drawing, wherever necessary or desirable, for its vocabulary, primarily on Sanskrit and secondarily on other languages."

The Eighth Schedule originally specified the following 14 languages : Assamese, Bengali, Gujrati, Hindi, Kannada, Kashmiri, Malayalam, Marathi, Oriya, Punjabi, Sanskrit, Tamil, Telugu and Urdu. By the Constitution (Twenty-first Amendment), 1967 and the Constitution (Seventy-first Amendment) Act, 1992, Sindhi, and Konkani, Manipuri and Nepali were added to the list respectively and these brought the total Scheduled languages to eighteen. In terms of Articles 351, the significance of the Eighth Schedule lies in providing a list of languages from which Hindi is directed to draw the appropriate "forms, style and expressions" for its enrichment. It is, however, well to remember that the Eighth Schedule also pertains to Article 344 (1) which provides for the constitution of a Commission by the President to make recommendations regarding various important matters with respect to the language issue.

With respect to these constitutional provisions, we are faced with considerable ambiguity. Thus, for instance, the Constitution of India does not provide a clear definition of the "regional" language of India! Are the languages included in the Eighth Schedule the "regional" languages? That too is not clear since the Chapter on the "Regional Languages" does not refer to the Eighth Schedule. We are left with only a general description of a regional language, through Articles 345 to 347, namely, a language in "use" in a particular state. It is important to note that Article 351 identifies the languages listed in the Eighth Schedule as the "languages of India." What about the other languages of India? In fact, the problem is compounded by our not having any rationale at all for the inclusion of certain languages in (and exclusion of other languages from) the Eighth Schedule.

The ambiguity faced in a textual reading of the Constitution of India is confirmed by the evidence that, right from the beginning, the Constituent Assembly was confronted with the controversial issue of language. The issue was first discussed at length during November 21-23, 1946, and continued to provoke controversy almost to the date of enactment of the Constitution.

It is perhaps because of such textual ambiguity, reflecting an uneasy compromise, that the issue of language nomenclature has exercised considerable public attention. The categories of "official" language, "state" language, "national" language, "common" language, "link" language, etc. have been largely taken out of discussion that took place during the national movement and debated later with renewed excitement without necessarily any additional analytical clarity invested in them.

In Independent India, as is to be expected, the language issue has been closely related with the political life of the country. The issue debated in different forums and the not infrequent language movements refer basically to the conflict of interests of different language communities in the country. Thus all arguments on the lines of various pluralistic models have had no consequential bearing in actuality. More often than not, the powers-that-be have brushed aside the crucial language issues in favour of political exigencies.

The articulation of these exigencies, such as national 'unity and integrity', 'national security', 'national sovereignty' and the like reflect the visionary bankruptcy and the myopic outlook that goes with exclusively vote bank concerns. In fact, the ethnic, cultural, and linguistic diversity of India, formalised through the federal structure enshrined in the Constitution of India, is most often critically balanced against the challenges thrown up repeatedly by electoral strategies based on tactical use of factors such as caste, creed, region, religion and language. The overall effect is a compounded complication of the complexities of the multidimensional diversity in the country. An interventionist vision and approach that could give a direction to the country seems to be utterly lacking. Even scholars who have displayed a concern for pluralistic language planning in India have done so more because, in recent decades, it has been academically fashionable to do so rather than a real commitment to intervene.

In the following section, we will examine some of the arguments that have been used to devalorise and denigrade the languages of the minorities - the powerless speech communities in India. These arguments are particularly based on the assumptions that the speech patterns of these communities are dialects and not languages since :

(i) they do not have scripts of their own ;

(ii) they do not have any great literature ;

(iii) they are linguistically and aesthetically poor.

Languages and Dialects

The presumption that the minority — powerless languages of tribal communities and other ethno-linguistic minorities are 'dialects' and not full-fledged 'languages' has for quite long been taken for granted in day-to-day discourse, among common people as well as scholars, including the respective native speakers, with the exception of linguists though. Traditionally, the distinction between a 'language' and a 'dialect' is based on two criteria :

(a) similarity in grammar, phonology and vocabulary and ;

(b) mutual intelligibility (cf. Allen & Corder 1975)

The first criteria would mean that if the speech forms of two speech communities and vocabulary, they would be labelled dialects of a particular language, and not as different languages. The criterion of intelligibility implies that not withstanding any other features, if two speech forms are mutually intelligible, they are dialects of the same language, and again, not different languages.

These two standard traditional criteria widely used by linguists as well as non-linguists have proved to be utterly misleading when applied to concrete sociolinguistic settings. For example, the three Scandanavian languages—Norweigian, Swedish and Danish, are virtually totally mutually intelligible and have similar grammar, vocabulary and pronunciation, and yet they are referred to as different languages. As one crosses the well-established national boundaries, the same variety of speech, with similarity in grammar, vocabulary and pronunciation, and mutual intelligibility, changes its name : Norwegian becomes Swedish, Swedish becomes Danish, and Danish becomes Norweigian.

At the other end of the scale, we also find that mutually unintelligible and linguistically dissimilar speech patterns, like Cantonese and Mandarin in China, have been considered dialects of the same language. In India, for example, Maithili, officially labelled as a dialect of Hindi, is virtually unintelligible to speakers of other dialects of Hindi like Mundari, Rajasthani etc. And linguistically Maithili shares more features of the eastern group of languages like Bengali and Oriya than with the dialects of the Hindi belt. The lesson to be learnt from such facts is that the distinction between language and dialect is based on historical and political factors and it may not have much to do with the linguistic properties of the speech patterns per se.

Here it is necessary to emphasize the dual nature of language. Though there are also other forms and systems, language is an inescapable system of communication in every human society. While, depending on technological developments, certain societies may not have certain forms of communication, there is no human society without a language, the pre-eminent system of human communication. At the same time language is also a powerful symbol of identity — it binds an individual speaker with other speakers in the same speech community, with its past, its tradition, culture and knowledge base. This point becomes clearer if we look at countries where we find a geographical dialect continuum. In many countries there is usually a chain of dialects. At any particular point along the chain, speakers of dialect X, for example, can easily understand the speech of speakers of dialect Y who live in adjoining areas but they would find it difficult to understand speakers of dialect S or T who live farther along the continuum and would completely fail to understand speakers of dialect B or C who live the farthest away. Thus the speakers of the dialects of the two extreme ends of the dialect continuum, say A and Z, will be totally unintelligible to each other but between A and Z they are linked by a chain of dialects who are mutually intelligible on the relative condition of adjacency.

This kind of situation has been found to be very common around the world. For example, an extensive continuum binds all the dialects of the languages known as German, Dutch and Flemish. It can thus be quite realistically hypothesised that if one walks across the villages from let's say, Northern Bengal to the southern most Tamil Nadu, one would find that people living in adjacent villages perfectly understand each other. In fact, it would be almost an impossible task to draw lines of neat opposition between two dialects or two languages. But if one takes a flight from Calcutta to Madras, the linguistic division would be striking. The basic problem should be clear by now : at what point along the continuum can one say that one language ends and the other begins? If we ignore the administrative boundaries, on what basis can we draw lines between Bengali and Oriya or between Telugu and Tamil? No doubt, we have been taught to think of these languages as different from each other, as autonomous entities. This is so because we don't walk but fly i.e. we look at the 'standard' varieties as available in the written form or the so called 'standard', 'pure' from that is used in formal, official communication. But if we walk along the villages, if we look at the local varieties along the continuum, we may find it impossible to distinguish dialects or languages. In a way, we are back to square one - to have to say that the distinction between a language and a dialect depends on extra-linguistic factors and not linguistic ones.

At this point, it is necessary to point out that the distinction between a dialect and a language can be examined from both a contemporary and a historical perspective. In fact, much of the confusion and ambiguity arises because we look at them as static entities. A great deal of the confusion would go if we try to understand the issue in terms of being and becoming and the processes of linguistic convergence and divergence. Historically, instances of both linguistic convergence and divergence have been documented and thus the two terms, dialect and language, become cyclically applicable. What is of significance to note here is that 'language' refers to a superordinate entity and 'dialect' to a subordinate one. We can talk about language, the superordinate entity, without referring to dialects, the subordinate entities. But whenever we talk about a dialect, we need to refer to a language. It is possible to say to that X is a language, but to say that Y is a dialect, we need to say that Y is a dialect of S or T.

The Criterion of Script

Even though modern linguistic research has focussed the primacy of speech in language studies, these still exist a great deal of misunderstanding and wide divergence of views and attitudes concerning the relationship between writing and speech. Languages, in different, usually isolated, parts of the world, which have not been written down or do not have scripts of their own, are often pejoratively referred to as dialects. Thus, people often talk of tribal languages as some sort of 'primitive' dialects. Given the overall consternation about how to draw a satisfactory distinction between a language and a dialect, one can state that such positions on the preeminence of the written language utterly fail to understand the true complexities of particularly the minority languages. For centuries, written language was held as the medium of great literature and thus as authentic models of linguistic excellence. The dictionary and grammar books were thus exclusively based on written, mostly literary, texts. The every day speech, by contrast, has consistently been condemned as unworthy of study. It was said to have no proper grammar. The speakers of such language were advised, to be able to 'speak properly', to follow the 'standard', 'correct' rules laid down in the grammar books based on the written norms.

Such a biased approach to unwritten languages and everyday speech has been challenged basically on three grounds ; (a) that there are many times more languages in the world than scripts ; (b) that speech is many thousand years older than writing ; and (c) children learn speech naturally as part of their growing process whereas writing has to be artificially taught. Many linguists, in fact, hypothesized that writing-systems are derivative and mostly based on the sounds of speech. Leonard Bloomfield, one of the pioneering American linguists in the present century stated ; "Writing is not language, but merely a way of recording language by means of visible marks" (Bloomfield 1933).

It was also argued that the spoken form constituted the maximal medium of communication among most peoples and most cultures, even in communities with a long history of writing. Robert Hall, in a popular paperback titled *Leave your Language Alone* (1950) asserted. "When we think of writing as more important than speech, we are putting the cart before the horse in every respect."

A related misconception is that a speech community that does not have a distinct script of its own is either a dialect of a primitive language. Now, since English and French languages use the same script, one of them can be said to have no script of its own. On this premise, shall we say that one of them is a dialect of the other or that one of them is a primitive language? In India, for example, there are 1652 mother tongues (1961 Census) but only 10 major script systems (Pattànayak 1981). On what basis or criteria shall we conclude that the scripts belong to certain languages and that the others, devoid of any authentic scripts of their own, are dialects or primitive languages?

In fact, a great majority of the languages in the world have adopted an available script for written purposes. For example, the Roman alphabet has spread and/or has been adopted successfully by so many languages that the status of other alphabets seem threatened. There is a great deal of confusion over the future of the Chinese script since a new romanized system has gained in use. In India, there is a body known as Roman Lipi Parishad (RLP) campaigning for the adoption of the Roman alphabets not only for the unwritten, minority and lesser known languages of India but even for the major languages !

The arguments, quite complex ones, are, however, based on technological grounds, to the exclusion of the socio-historical, cultural and political dimensions of the script issue. The RLP argues that India being a poor country cannot afford the luxury of making machines for each of the alphabetic scripts used in India. According to one estimate, already some seventy percent of the typewriters in India are made exclusively for the Roman alphabet. It has also been pointed out that, in the context of an unprecendented increase in the use of computers in India, the Roman script is easier and more economical to adopt to the monitors and key boards than the various Indian scripts. Technically, a much larger dot-matrix system would be needed to cope with the diacritics that are used above, below, before and after the alphabets.

It is a paradox that in spite of the emotional and political assertions in favour of native scripts and languages, the demand for reading material in the roman script has been steadily increasing. The magic of the market forces has substantially contributed to this paradox. In Bombay, for example, there was an experiment in which telephone directories were printed in both the English and Devnagari alphabets. Interestingly, there was a demand for 300,000 copies of the former but less than fifty percent of the paltry 5000 Devnagari copies were sold.

In spite of all that, the Roman script has been out rightly rejected as an alternative for any of the 22 languages recognized by the Sahitya Academi, India's highest body devoted to literature. Scholars and statesmen, both in the pre-independence and post independence period have strongly pleaded in favour of Roman script for all the languages spoken in India on economic and technological grounds and on linguistic grounds of greater efficiency for literacy programmes and mutual language learning among cognate languages. But their arguments and pleadings have totally been ignored since the historico-cultural identity of at least the dominant ethnolinguistic groups in India is very much bound up with their respective distinct script systems. Opponents of the Roman script have vehemently argued that its acceptance would threaten the existence of one of the most important symbols of ethnocultural identity and might eventually supplant all indigenous scripts.

Thus we witness divergent vies and packages about the nature of script and its relationship to spoken language on the one hand and to ethnolinguistic identity on the other. The complex issues involved continue to be emotionally debated since they reflect fundamentally different conceptions of the future society. What is most disturbing in the Indian context is the fact that while the dominant, majority languages have tenaciously rejected the Roman alphabet, and rightly so, there have been aggressive attempts at making the minority/unwritten languages adopt the dominant scripts. For example, Sindhi speakers in India were made to adopt the Devnagari script for their language before it could be included in the Eighth Schedule of the Constitution (Cf. Daswani 1979). The Government of India attempted the same with the Bodos in Assam. Towards the end of the 70s, the latter wanted to adopt the Roman script for their language in place of the Assamese script that was in use. However, the movement to replace the Assamese script by the Roman was violently crushed by the State and Central Governments. The then Union Home Minister bluntly ordered the Bodo speakers to either continue with the Assamese script or to switch over to Devnagari (cf. Aggarwal 1993, 1995). In the end, it is clear that the econo-technological criterion of script is baseless. A host of factors, racial, geographical, political, cultural, economic, religious and like influence the issue and create volatile states of mind among of mind among individuals, groups and communities.

The Question of Value Judgements

Another area where minority, tribal, indigenous languages have suffered a great deal is that of aesthetic value judgements. There are widespread mis-notions among the common people as well as scholars, including linguists, that some languages are more pleasant, more beautiful, nicer than others. The grave danger here is that such misconceptions are often accompanied by social and administrative rejection, often ridicule and hatred, leading even the native speakers themselves to disparage their own mother tongues. Children belonging to these communities often develop feelings of linguistic inferiority and even feelings of what has been called linguistic self-hatred. The result often is that the speakers of these languages often become inarticulate and are reluctant to express themselves.

Some scholars go a step further and argue that a particular language has acquired power and prestige because it is inherently more pleasant and attractive. According to such a view, French and Sanskrit, for example, became more prestigious languages and rose to the top — the result of their intrinsic outstanding beauty. With the emergence of modern linguistics, scholars have argued that all the different languages of the world are objectively as pleasant as others. They are perceived positively or negatively because of particular cultural, social and political pressures operating in the community. Different languages in different contexts acquire high status and prestige directly from the high socio-economic status of the groups that happen to speak them. Because of such pressures these languages come to be regarded as superior and desirable on many grounds, including the aesthetic. The social pressures of such value judgements become so powerful that they have driven even the speakers of minority/tribal anguages to emulate the so called 'great languages'. However, recent esearch has made it clear that aesthetic judgements are never objective or culture-free. The notion of superiority of languages can be seen within the frameworks of linguistic imperialism and cultural hegemony in general. There is no doubt about the fact that an unequal power relationship sustains nd promotes the cultural norms which lead to the negative evaluation of the language of the powerless. The empowerment of these peoples will nevitably lead to the rejection of the negative cultural and aesthetic projection of the language of the minority, powerless peoples.

It can be summarily concluded that languages have a relationship of differences, not deficiency. What is correct in one language need not to be so in another. In English, for example, the verb follows the subject in sentence, while in Hindi the subject is followed by an object which is the followed by the verb. To take another example in Hindi while 'leheng (pettycoat) belongs to the masculine gender and the 'pulis' (police) belon to the feminine. In English neither has any gender. To take still anoth example, the Eskimos have 14 terms for what in English we call snow. W must realize that language is an arbitrary system in which communicatio depends upon agreement among members of the speech communit concerned. The question of one language being more logical than anoth simply does not arise. We may in fact ask what logic is involved in callin the same four-legged domestic pet a *hund* in German, a *chien* in Frencl *kutta* in Hindi and *dog* in English? It is simply a question of convention. A speakers of, say, French, at some point in the past, agreed to call our mo faithful friend a *chien* and there has been no serious challenge or objectio to this convention.

On the whole, languages are best seen as different communicativ systems reflecting different conditions of human existence. They may diffe in complexity, in literary tradition and in the wealth of words. But this nee not imply that a particular language/dialect has more expressive power tha another. We have referred to the wealth of words for one physical ite (snow) in Eskimos. This is no may means that the Eskimo language ha more expressive power than English. It simply reflect the fact that th Eskimos live in an environment where very subtle distinctions amon different kinds of snow in imperative.

For certain intellectual tasks one language may prove more convenie than another. For example, one can discuss robots and biotechnology i English without difficulty but it may be virtually impossible to do so in a Indian language without borrowing a whole range of English words. Now is not because Indian languages are inherently incapable of expressin notions and concepts of science and technology. The simple fact is tha words related to these notions exist in English because they were develope in the English-speaking world and not in India. Conversely, it is equally tru that there are a whole lot of things that can be so concisely and beautifull expressed in the tribal languages and these cannot be expressed in Englis without circumlocution and diluting the meaning to a large extent. Thus, th entire range of value judgements, creating a pyramydical hierarchy o languages, is unscientific and baseless and a hindrance to lingua-cultur development of a vast majority of peoples. Hence, several wor organisations including the UNESCO, have highlighted the desirability of sincere endeavour for changing popular misconceptions about languages and promoting the notion of equality of languages. In operational terms, language equality would include :

(a) Equal prestige and status;

(b) Equal freedom of use;

(c) Equal opportunities for development;

(d) Equal consideration as educational media;

(e) Equal consideration as producer and transmitter of culture; and

(f) Equal economic viability.

Right to Mother Tongue

We shall now address the question of the importance of learning and using the 'mother tongue'. One may simply ask : why is it necessary to maintain, develop, promote all mother tongues in the world, including even the extremely small ones whose very existence is in doubt? In a large number of societies the existence of smaller languages has been threatened by the dominant languages by imposition through elite structures of education, mass media etc. Speakers of dominant, majority languages first create the conditions, including enactment of official provisions, whereby the speakers of minority languages have to use the dominant, legitimized language(s) and then they scornfully remind the minority speakers about its indispensability for inter-ethnic and intra-ethnic communication. They also go into justifying that the use of the dominant language is in the interest of the minorities and that the latter need to accept the reality and its supporting legislations.

In the Indian context, the propagators of the notion of language superiority forget the fact that their own languages were perceived as non-viable, undeveloped linguistic burdens contributing to linguistic chaos during the British colonial rule. Even today there exists a hierarchy of languages whereby English would be ranked at the top and many great literary languages of India at the bottom. Even today, all the Indian languages are considered not yet developed enough for discourse on science and technology. This is because languages are mostly evaluated in a social vacuum with some vague kind of intellectual and academic criteria. Additionally, it has been argued that a particular language cannot be used in a particular domain, say, education, because it has not been developed enough. Such an argument implicitly advocates the perpetuation of the 'underdeveloped' status of that language since it can be developed through use only.

There is, within a natural paradox, an unambiguous acceptance of the fact that mother tongue is the principal basis of.development of one's cognitive faculties and that is a primary means by which a person identifies himself or herself with his/her community, culture and history. Therefore, the maintenance of one's mother tongue is considered valuable and necessary not just for the individual, but, also for the benefit and development of the entire ethnic national community. It has also been argued that the loss of a language, however small a minority might speak it, represents a loss to the individual might speak it, represents a loss to the individual, the community, the country and perhaps humankind as a whole. This is precisely because every language mirrors and generates a possible world view, an alternative reality.

We may note in brief the following positive gains of learning and maintaining one's mother tongue :

(1) This is the language in which a child first of all finds expression of his/her self and that of his/her immediate environment.

(2) Mother tongue makes access to education broad-based.

(3) Mother tongue can bridge the gap between home and social institutions. This gap has been found to be source of disadvantage in education, employment, administration, and dispensation of justice.

Because of the growing realization of the importance of mother tongue, efforts are being made to retain the linguistic richness of different speech communities. Unfortunately this is done mostly by salvage work, that is, preservation of languages as artifacts, reduced to academic grammars and collection of texts. In fact, salvage work can further distance the language from its members. Salvage work is usually entered into because it is of greater use to the expropriators, some members of the dominant culture. After developing museums of living things, such salvage experts often eulogize a country as a 'magnificent national park', 'a socio-linguistic laboratory' and the like. What is necessary is to maintain and develop a language through use and this can be done by speakers only. Any community's political, economic and cultural foundation becomes weak if large sections of its populations do not feel encouraged intrinsically and extrinsically to express behavioural patterns that are meaningful and native to them. The wealth of knowledge of a community is made accessible to the descendants of its members basically through the mother tongue.

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Which are the Best Undergraduate Medical Colleges in India?*

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Introduction

Undergraduate medical colleges in India have widely varying standards; some are considered to be in the international front rank and others do not have the minimal standards for training a basic doctor. This is unlike the situation in most western countries where the difference in quality between medical colleges is small and standards are controlled by central and powerful bodies like the General Medical Council (GMC) of Britain and the Council on Graduate Medical Education of the USA. In India, medical education is a State subject under the control of State medical councils and it has thus not been possible for the Medical Council of India (MCI), a body analogous to the GMC, to impose uniform standards on the quality of undergraduate training. Despite the widely varying quality of their training, the Indian government treats all doctors with an MBBS degree from any college as having equal competence. Some foreign countries rather unfairly, have derecognized all Indian medical degrees or pay their holders lower salaries irrespective of where the degrees were obtained.

There has been no previous attempt to assess the quality of individual Indian medical colleges. This is done officially by the University Grants Commission of the United Kingdom and unofficially in the USA by the publication *US News and World Report.*[1] In fact the annual *US News* survey has become so authoritative that many colleges cite their position on it to attract the best candidates. We felt a similar study in India might be useful. It would help potential medical college aspirants by providing them information about an institution in which they are interested and assist grant-giving bodies and employers both here and abroad to assess the quality of their candidates.

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Methods

The three main functions of an undergraduate college are patient care, teaching and research, but because we felt it would not be possible to assess the quality of quality of patient care easily we substituted this by a criterion called 'reputation'.

Teaching

This was assessed by the ratio of faculty members and students. These data were obtained from *The Commonwealth Universities Year Book For 1995*[2] and the *Universities Handbook for 1994.*[3] We were not able to get information on the number of faculty and students of 39 colleges because they were not included in these publications and because their Deans did not reply to a questionnaire we sent them. These colleges have been ranked separately.

Research

Research was evaluated on the basis of the number of publications in indexed journals in 1995 (by consulting MEDLINE under the heading 'India'), the average number of citations for the years 1993 and 1994 (from the Corporate Index of the Science Citation Index) and the research grants obtained from the Indian Council of Medical Research (ICMR) in 1991 — we were not able to get more recent data as the ICMR considered that 'it would serve no useful purpose in undertaking a ranking of medical colleges'.

Reputation

To assess this we sent out 460 questionnaires to the Deans and Heads of the departments of Medicine and Surgery of every medical college in India as well as to 44 other doctors, asking them to grade the undergraduate colleges into 4 quartiles according to quality by assigning them a mark from 1–4. We also asked them which colleges, apart from their own, they considered to be the top 10 in this country. Out of a total of 119 questionnaires returned; 114 were satisfactorily completed.

Scoring

The college that got the highest mark, i.e. had the largest number of publications, citations and grants and the highest faculty–student ratio was given a score of 100. The marks of the other colleges were calculated as a percentage accordingly. For reputation, the inverse scores were calculated, e.g. a college considered to be in the third quartile was given a score of 1/3 (33%). If a college figured first in the 'top ten', it was given a score of 10, the second college 9 and so on till the one rated tenth was given a score of 1. Those not included in the top ten were given a score of 0. The scores for teaching, research and reputation were given equal weightage and the overall grade expressed as a mean. Finally, the colleges were ranked according to their overall scores.

Statistical Analysis

We compared the ranking against the reputation by performing a regression analysis using the Lotus 1–2–3 (version 2).

Results

We obtained data on 135 medical colleges, the details are listed in Table 1. There are probably at least 15 other colleges in existence but they are not listed in any official publication.

Teaching

The faculty-student ratio varied from 7:1 at the All India Institute of Medical Sciences (AIIMS) to 1:10 for some of the new private colleges.

Research

The AIIMS had published 135 papers in 1995 which were listed in MEDLINE. The next institution, the Christian Medical College. Vellore published 36. Only 7 medial colleges had more than 10 papers, with 89 (66%) having not a single entry. The number of publications was closely related to the number of citations received but not to the amount of funding received from the ICMR. For instance, the Gandhi Medical College, Bhopal got Rs. 24.8 million as grants in 1991 (possibly because of the gas disaster in 1984) but did not publish a single indexed article! This was also true of other medical colleges who got lesser grants but did not manage to produce any indexed research publication. The ICMR disbursed grants to 88 different medical college but only 41 managed to produce any indexed papers — 5 colleges published articles without receiving any ICMR grants.

Table 1. Data on 135 medical colleges (Faculty : annual student intake; publications; 1995; mean citation; 1993–94; grants; Rs. in lakhs)

Name of medical college	*Teaching*			*Reasearhc*					*Reputation*		*Overall*	
	Faculty: student	*Score*	*Rank*	*Publications*	*Citations*	*Grants*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*
Andhra Pradesh												
Andhra MC, Vishakhapatnam	na	na	–	0	0	3	0.13	52	20	48	10	–
Gandhi MC, Hyderabad	na	na	–	1	0.5	0	0.3	47	18.35	60	9.3	–
Guntur MC, Guntur	1.38	19.71	40	0	0	0	0	59	13.77	101	11.1	56
Kakatiya MC, Warangal	1.51	21.57	35	0	0	0	0	59	15.82	80	12.4	51
Kurnool MC, Kurnool	na	na	–	0	0	0	0	59	19.37	54	9.6	–
Osmania MC, Hyderabad	1.26	18	47	4	9	23	2.96	18	26.37	29	15.8	36
Rangaraya MC, Kakinada	na	na	–	0	0	0	0	59	14.16	96	7.1	–
SVMC, Tirupati	3.75	53.57	3	0	0	1	0.03	56	17.12	71	23.6	14
Siddharth MC, Vijayawada	0.31	4.42	77	0	0	2	0.06	55	15.87	79	6.7	70
Assam												
Assam MC, Dibrugarh	1.15	16.42	50	0	0	24	0.96	33	21.44	42	12.9	49
Guwahati MC, Guwahati	2.39	34.14	13	0	1	20	0.93	34	21.59	40	18.7	25
Silchar MC, Silchar	na	na	–	0	0	0	0	59	14.45	94	7.2	–
Bihar												
JLNMC, Bhagalpur	1.83	26.14	22	0	0	0.4	0.01	57	14.61	92	13.6	46
Darbhanga MC, Darbhanga	na	na	–	0	0	0.01	0.003	58	13.05	105	6.5	–
ANMC, Gaya	2.77	39.77	8	0	0	0	0	59	13.05	105	17.5	28

Nalanda MC, Patna	1.61	23	29	0	0	0	0	59	16.29	76	13.1	48
MGMMC, Jamshedpur	0.41	5.8	74	1	3.5	15	1.26	30	17.48	68	8	66
Patna MC, Patna	na	na	–	0	0	0.4	0.01	57	21.46	41	10.7	–
Patliputra MC, Dhanbad	na	na	–	0	0	0	0	59	15.15	85	7.6	–
Rajendra MC, Ranchi	na	na	–	1	0	0.4	0.01	57	15.06	87	7.5	–
Sri Krishna MC, Muzaffarpur	2.45	35	12	0	0	0.4	0.01	57	13.74	102	16.2	33
Delhi												
AIIMS	7	100	1	135	279	831	100	1	100	1	100	1
LHMC	1.29	18.42	45	6	21	45	5.73	10	50.35	8	28.1	9
MAMC	1.04	14.85	55	2	28	55	6	9	65.84	5	28.8	6
UCMS	0.82	11.71	62	12	10	35	5.5	11	31.54	21	16.2	33
Goa												
Goa MC, Panaji	1.32	18.85	43	4	1.5	13	1.66	26	17.62	66	12.7	50
Gujarat												
BJMC, Ahmedabad	1.35	19.28	41	0	1.5	2	0.23	49	23.39	36	14.3	43
NHLMMC, Ahmedabad	0.29	4.14	78	0	0	0	0	59	18.18	62	7.4	68
MC, Baroda	1.24	17.71	48	0	1.5	19	0.93	34	39.66	14	10.6	57
Parmukh Swami MC, Karamsad	0.23	3.28	80	0	0	0	0	59	13.12	104	5.4	72
MP Shah MC, Jamnagar	0.63	9	70	0	0	2	0.06	55	20	48	9.7	60
GMC, Surat	2.66	38	9	0	1.5	5	0.36	46	21.46	41	19.9	23

Haryana											
Agroha Med. Institute, Agroha	na	na	–	0	0	0	0	59	14.12	97	7.1	–
MC, Rohtak	1.29	18.42	45	11	16	16	5.23	12	20.76	45	15.1	40
Himachal Pradesh												
IGMC, Shimla	1.6	22.85	30	0	0.5	0.9	0.1	53	25.5	31	16.1	34
Jammu and Kashmir												
GMC, Jammu	2.64	37.71	10	0	1	11	0.56	41	20	48	19.4	24
GMC, Srinagar	2.64	37.71	10	0	0	23	0.93	34	25	32	21.2	18
Karnataka												
BR Ambedkar MC, Bangalore	0.33	4.71	76	0	0	0	0	59	16.3	75	7	69
Bangalore MC, Bangalore	1.4	20	38	0	0	2	0.06	55	27.8	25	15.9	35
Kempegowda Med Inst. Bangalore	0.17	2.42	81	0	0	0	0	59	15.2	84	9.2	62
MS Ramaiah MC, Bangalore	0.6	8.57	71	0	0.5	1.5	0.13	52	20.8	44	9.7	60
Sri Devraj Urs MC, Kolar	na	na	–	0	0	0	0	59	14.5	93	7.2	–
Sri Siddharatha MC, Tumkur	na	na	–	0	0	0	0	59	14.9	89	7.4	–
St. John's MC, Bangalore	2.7	38.57	8	6	10	54	4.86	13	41.9	12	28.4	8
GMC, Bellary	na	na	–	0	0	0	0	59	15.4	83	7.7	–
MRMC, Gulbarga	1.47	21	36	0	0.5	0	0.06	55	17.9	64	12.9	49
Al Ameen MC, Bijapur	na	na	–	0	0	0	0	59	14	99	7	–

BLDEAMC, Bijapur	na	na	–	0	0.5	0	0.06	55	14.5	93	7.2	–
JNMC, Belgaum	1.09	15.57	53	0	0.5	22	0.93	34	17.1	72	11.1	56
Karanataka MC, Hubli	1.57	22.43	32	0	0	0	0	59	18.6	57	13.6	46
KMC, Mangalore	1.59	22.71	31	6	3	0.5	1.82	23	37.6	15	20.7	19
KMC, Manipal	2.53	36.14	11	21	49	19	12.1	4	44.6	10	26.9	11
AIMS, Bellur	na	na	–	0	0	0	0	59	14.8	90	7.4	–
GMC, Mysore	1.02	14.52	56	1	0	0	0.26	48	18.9	56	11.2	55
JJMMC, Davangere	1.08	15.42	54	0	0	0	0	59	19.87	50	11.7	53
JSSMC, Mysore	na	na	–	0	0	0	0	59	17	73	8.5	–
Kerala												
MC, Kottayam	na	na	–	1	1	2	0.36	46	18.5	58	9.4	61
MC, Calicut	1.68	24	27	0	2.5	6	0.53	43	26.4	28	16.9	30
MC, Trichur	na	na	–	0	1.5	0	0	59	17.5	67	8.7	–
MC, Trivandrum	2.7	38.57	8	1	2	40	0.16	51	23.2	37	20.6	20
TDMC, Alleppey	1.96	28	20	0	1	1	2.06	22	17.5	67	15.8	36
Madhya Pradesh												
SSMC, Rewa	1.1	15.71	52	0	0	0.5	0.2	50	14.8	90	10.2	59
GMC, Bhopal	1.02	14.57	56	0	0.5	248	10.06	6	20.2	47	14.9	41
MGMC, Indore	0.79	11.28	64	1	0	2	0.3	47	20.5	46	10.6	57
GR MC, Gwalior	0.56	8	73	0	0.5	29	1.23	31	17.8	65	9	63
GMC Jabalpur	0.66	9.42	69	0	0	32	1.3	29	16.5	74	9	63
JNMMC, Raipur	na	na	–	1	0	2	0.3	47	17.5	67	8.9	–

Maharashtra												
PDMMC, Amravati	na	na	–	0	0	0	0	59	15.5	82	7.75	–
GMC, Yawatmal	na	na	–	0	0	0	0	59	14.5	93	7.2	–
GMC, Aurangabad	na	na	–	0	0	2	0.06	55	15	88	7.5	–
GMC, Nanded	na	na	–	0	0	0	0	59	14.5	93	7.2	–
SRTRMC, Ambajogai	na	na	–	0	0	0	0	59	13.5	103	6.7	–
GMC, Nagpur	1.96	28	20	3	1.5	5	1.1	32	26.5	27	18.5	26
IGMC, Nagpur	1.73	24.71	25	0	1	2	0.13	52	21	43	15.2	39
MGIMS, Sevagram	0.84	12	60	5	2	58	3.8	14	34.5	18	16.7	31
VMMC, Solapur	na	na	–	1	1.5	0	0.4	44	15	88	7.7	–
GMC, Miraj	0.89	12.71	58	0	0	0	0	59	15	88	9.2	62
KIMS, Karad	na	na	–	0	0	0	0	59	14	99	7	–
MC, Kolhapur	na	na	–	0	0	0	0	59	16	77	8	–
Grant MC, Bombay	0.71	10.14	67	1	2	16	1.1	32	56.5	7	22.5	16
LTMMC, Bombay	1.28	18.28	46	4	9	5	2.23	21	27.1	26	15.8	36
MGMMC, Bombay	na	na	–	0	0	0	0	59	19	55	9.5	–
SOSMC, Bombay	1.12	16	51	16	25	58	9.26	7	43	11	22.7	15
SDBJMC, Bombay	na	na	–	0	0	0	0	59	15.5	82	7.7	–
TNMC, Bombay	2.2	31.42	17	1	3.5	3	0.8	36	23.9	35	18.7	25
AFMC, Pune	0.66	9.92	68	3	0.5	3	0.93	34	69.5	4	26.7	12
BJMC, Pune	1.18	16.85	49	0	4.5	44	2.3	20	36	17	18.3	27
BUNMC, Pune	na	na	–	0	0.5	0	0.06	55	16	77	8	–

GMC, Dhule	na	na		0	0	0	0	59	10	106	5	–
RMC, Shriampur	na	na	–	0	0	1	0.03	56	14.5	93	7.2	–
Manipur												
Regional MC, Imphal	0.87	12.42	59	1	3	1	0.6	40	14.1	98	9	63
Orissa												
MKCGMC, Berhampur	1.55	22.14	34	0	0	5	0.2	50	17.2	70	13.1	48
VSSNC, Sambalpur	1.74	24.85	24	0	0	13	0.53	43	14.1	98	13.1	48
SCBMC, Cuttack	na	na	–	0	1	39	1.63	27	18.4	59	10	–
Pondicherry JIPMER	2.7	38.57	8	9	29	28	6.76	8	76	3	40.4	3
Punjab												
MC, Amritsar	1.39	19.85	39	6	0	2	1.53	28	23.2	37	14.8	42
GMC, Chandigarh	na	na	–	1	0	0	0.23	49	19.4	53	9.8	–
GMC, Ludhiana	3.6	51.42	5	1	4	0.4	0.71	38	31.4	23	27.7	10
DMC, Ludhiana	2.93	41.85	6	0	4.5	1	0.56	41	19.4	53	20.5	21
GMC, Patiala	2.07	29.57	19	0	0	0.9	0.03	56	18.2	61	15.9	35
CGSMC, Faridkot	0.83	11.85	61	0	0	0	0	59	15.1	86	8.9	64
Rajasthan												
SNMC, Jodhpur	2.16	30.85	18	1	0.5	10	0.7	39	18.5	58	16.6	32
JLNMC, Ajmer	1.56	22.28	33	1	2.5	0.4	0.54	42	18.2	61	13.6	46
RNTMC, Udaipur	1.89	27	21	3	3.5	14	1.7	25	17.8	65	15.5	37
SNSMC, Jaipur	1.72	24.57	26	6	8	17	3.1	17	33.2	19	20.2	22
SPMC, Bikaner	1.56	22.28	33	0	2	14	0.8	36	17.3	69	13.4	47

Tamil Nadu												
CMC, Chengalpattu	2.21	31.57	16	0	0	0.4	0.01	57	15.9	78	15.8	36
CMC, Vellore	2.88	41.14	7	36	137	187	33	2	87.5	2	53.8	2
CMC, Coimbatore	1.78	25.42	23	0	0	0.4	0.01	57	19.5	52	14.9	41
GKMC, Madras	0.74	10.57	66	0	1	16	0.76	37	24.6	33	11.9	52
MMC, Madras	2.26	32.28	15	3	10	47	3.76	15	50	9	28.6	7
MMC, Madurai	0.26	3.71	79	0	3	33	1.66	26	30.5	24	11.9	52
PSG IMS, Coimbatore	1.18	16.85	49	0	0	0	0	59	24.2	34	13.6	46
PMC, Perundurai	na	na	–	0	0	0	0	59	16	77	8	–
SRMC, Madras	na	na	–	0	0	4	0.16	51	22	39	11	–
SMC, Salem	na	na	–	0	0	0	0	59	15.7	81	11	–
Stanley MC, Madras	1.66	23.71	28	1	1	13	0.9	35	40.5	13	21.7	17
TMC, Thanjavur	2.34	33.42	14	0	3	0	0.3	47	17.3	69	17	29
Tirunelveli MC, Tirunelveli	0.75	10.71	65	0	1	0	0.13	52	14.7	91	8.5	65
Uttar Pradesh												
SNMC, Agra	1.12	16	51	3	0	65	3.33	16	31.3	22	14	45
JNMC, Aligarh	3.62	51.71	4	4	6	24	2.33	19	20.8	44	24.9	13
IMS, Varanasi	4.5	64.28	2	14	20	363	20.4	3	32	20	38.8	4
MRLBMC, Jhansi	1.31	18.71	44	0	0	0.8	0.03	56	19.6	51	12.7	50
GSVMMC, Kanpur	1.34	19.14	42	0	1	17	0.8	36	22.7	38	14.2	44
LLRMMC, Meerut	0.23	3.28	80	0	1.5	37	1.66	26	18.5	58	7.7	67
MLNMC, Allahabad	0.8	11.42	63	3	2	17	1.63	27	18.1	63	10.3	58

BRDMC, Gorakhpur	na	na	–	1	0	8	0.56	41	13.9	100	7.3	–
KGMC, Lucknow	1.42	20.28	37	5	36	130	10.9	5	58.8	6	29.9	5
West Bengal												
BMC, Burdwan	2.2	31.42	17	0	0.5	0.4	0.08	54	14.7	91	15.3	38
BSMC, Bankura	na	na		0	0	0	0	59	14.3	95	7.2	–
Calacutta NMC, Calcutta	1	14.28	57	0	0.5	0	0.06	55	33.2	19	15.8	36
MC, Calcutta	1.12	16	51	4	0.5	18	1.76	24	37.4	16	18.3	27
NSMC, Calcutta	0.57	8.14	72	0	1	0	0.13	52	26.15	30	11.4	54
RGKMC, Calcutta	1.08	15.42	54	0	0.5	13	0.6	40	19.9	49	11.9	52

Table II. Ranks based on overall score. The colleges for which teaching data were not available have been ranked separately (a1–a26).

Rank	*Name of medical college*	*Teaching*	*Research*	*Reputation*
Division 1				
1	AIIMS, Delhi	1	1	1
2	CMC, Vellore	7	2	2
3	JIPMER, Pondicherry	8	8	3
4	IMS, Varanasi	2	3	20
5	KGMC, Lucknow	37	5	6
6	MAMC, Delhi	55	9	5
7	MMC, Madras	15	15	9
8	St. John's MC, Bangalore	8	13	12
9	LHMC, Delhi	45	10	8
10	CMC, Ludhiana	5	38	23
11	KMC, Manipal	11	4	10
12	AFMC, Pune	68	34	4
13	JNMC, Aligarh	4	19	44
14	SVMC, Tirupati	3	56	71
15	SGSMC, Bombay	51	7	11
16	Grant MC, Bombay	67	32	7
17	Stanley MC, Madras	28	35	13
18	GMC, Srinagar	10	34	32
19	KMC, Mangalore	31	23	15
20	MC, Trivandrum	8	51	37
21	DMC, Ludhiana	6	41	53
22	SMSMC, Jaipur	26	17	19
23	GMC, Surat	9	46	41
24	GMC, Jammu	10	41	48
25	Guwahati MC, Guwahati	13	34	40
25	TNMC, Bombay	17	36	35
26	GMC, Nagpur	20	32	27
27	BJMC, Pune	49	20	17
27	MC, Calcutta	51	24	16

Rank	*Name of medical college*	*Teaching*	*Research*	*Reputation*
28	ANMC, Gaya	8	59	105
29	TMC, Thanjavur	14	47	69
30	MC, Calicut	27	43	28
Division 2				
31	MGIMS, Sevagram	60	14	18
32	SNMC, Jodhpur	18	39	58
33	UCMS, Delhi	62	11	11
33	SKMC, Muzaffarpur	12	57	102
34	IGMS, Shimla	30	53	31
35	Bangalore MC, Bangalore	38	55	25
35	GMC, Patiala	19	56	61
36	Calcutta NMC, Calcutta	57	55	19
36	Osmania MC, Hyderabad	47	18	29
36	CMC, Chengalpattu	16	57	78
36	LTMMC, Bombay	46	21	26
36	TDMC, Alleppey	20	22	67
37	RNTMC, Udaipur	21	25	65
38	BMC, Burdwan	17	54	91
39	IGMC, Nagpur	25	52	43
40	MC, Rohtak	45	12	45
41	CMC, Coimbatore	23	57	52
41	GMC, Bhopal	56	6	47
42	MC, Amritsar	39	28	37
43	BJMC, Ahmedabad	41	49	36
44	GSVMMC, Kanpur	42	36	38
45	SNMC, Agra	51	16	22
46	JLNMC, Ajmer	33	42	61
46	Karnataka MC, Hubli	32	59	57
46	JLNMC, Bhagalpur	22	57	92
46	PSG IMS, Coimbatore	49	59	34
47	SPMC, Bikaner	33	36	69
48	Nalanda MC, Patna	29	59	76

Rank	*Name of medical college*	*Teaching*	*Research*	*Reputation*
48	MKCGMC, Berhampur	34	50	70
48	VSSNC, Sambalpur	24	43	98
49	Assam MC, Dibrugarh	50	33	42
49	MRMC, Gulbarga	36	55	64
50	Goa MC, Panaji	43	26	66
50	MRLBMC, Jhansi	44	56	51
51	Kaktiya MC, Warangal	35	59	80
52	MMC, Madurai	79	26	24
Division 3				
52	GKMC, Madras	66	37	33
52	RG Kar MC, Calcutta	54	40	49
53	JJMMC, Davangere	54	59	50
54	NRSMC, Calcutta	72	52	30
55	GMC, Mysore	56	48	56
56	Guntur MC, Guntur	40	59	101
56	JNMC, Belgaum	53	34	72
57	MGMMC, Indore	64	47	46
57	MC, Baroda	48	34	14
58	MLNMC, Allahabad	63	27	63
59	SSMC, Rewa	52	50	90
60	MS Ramaiah MC, Bangalore	71	52	44
60	MP Shah MC, Jamnagar	70	55	48
61	MC, Kottayam		46	58
62	Kempegowda M1. Bangalore	81	59	84
62	GMC, Miraj	58	59	88
63	Regional MC, Imphal	59	40	98
63	GMC, Jabalpur	69	29	74
63	GRMC, Gwalior	73	31	65
64	GGSMC, Faridkot	61	59	86
65	Tirunelveli MC, Tirunelveli	65	52	91
66	Patna MC, Patna	74	30	68
67	LLRMMC, Meerut	80	26	58

Rank	*Name of medical college*	*Teaching*	*Research*	*Reputation*
68	MHLMMC, Ahmedabad	78	59	62
69	BRAMC, Bangalore	76	59	75
70	Siddharth MC, Vijayawada	77	55	79
71	NBMC, Darjeeling	75	45	94
72	Pramukh SMC, Karamsad	80	59	104
	Colleges for which teaching data were not available			
a1	SCBMC, Cuttack	27	59	86
a2	SRMC, Madras	51	39	90
a3	MGMMC, Jamshedpur	57	41	98
a4	Andhra MC, Vizag	52	48	100
a5	GMC, Chandigarh	49	53	102
a6	Gandhi MC, Hyderabad	47	60	107
a7	Kurnool MC, Kurnool	59	54	113
a8	MGMMC, Raipur	59	55	114
a8	JNMMC, Bonbay	47	67	114
a9	MC, Trichur	59	67	126
a10	JSSMC, Mysore	59	73	132
a10	VMMC, Solapur	44	88	132
a10	BUNMC, Pune	55	77	132
a10	PMC, Perundurai	59	77	136
a10	MC, Kolhapur	59	77	136
a11	SMC, Salem	59	81	140
a12	BRDMC, Gorakpur	41	100	141
a12	PD MMC, Amravati	59	82	141
a12	SDBJMC, Bombay	59	82	141
a13	GMC, Bellary	59	83	142
a14	GMC, Aurangabad	55	88	143
a15	Patliputra MC, Dhanbad	59	85	144
a15	Rajendra MC, Ranchi	57	87	144
16	BLDEAMC, Bijapur	55	93	148
16	Sri Siddhartha MC, Tumkur	59	89	148
17	RMC, Shriampur	56	93	149

Rank	*Name of medical college*	*Teaching*	*Research*	*Reputation*
a17	AIMS, Bellur	59	90	149
a18	GMC, Nanded	59	93	152
a18	Sri Devraj Urs MC, Kolar	59	93	152
a18	GMC, Yawatmal	59	93	152
a19	Silchar MC, Silchar	59	94	153
a20	BSMC, Bankura	59	95	154
a21	Rangaraya MC, Kakinada	59	96	155
a22	Agroha Med Inst. Agroha	59	97	156
a23	Al Ameen MC, Bijapur	59	99	158
a23	KIMS, Karad	59	99	158
a24	SRTRMC, Ambajogai	59	103	162
a25	Darbhanga MC, Darbhanga	58	105	163
a26	GMC, Dhule	59	106	165

Reputation

This is listed in Table I, according to State and in Table II as part o the overall ranking. There was a close correlation between overall rank an reputation (correlation coefficient = 1.002; standard error of coefficien 0.113; $r^2 = 0.456$). In Table III we have listed the top 20 medical college according to rank and reputation. Fifteen colleges judged to be among th best 20 by our correspondents were also in the top 20 using our system o ranking. However 5—Medical College, Baroda; Medical College, Calcutta BJ Medical College, Pune; National Medical College, Calcutta and SM Medical College, Jaipur — seemed to be overrated because although the had high reputations their performance did not justify their inclusion in th top 20 while the Christian Medical College, Ludhiana; The JN Medica College, Aligarh; SV Medical College, Tirupati; Government Medica College, Srinagar and Medical College, Trivandrum seemed to hav achieved more than they were reputed to have done. Even among 1 colleges which were included in the top 20 both by reputation as well as b overall rank there were some anomalies — the Institute of Medical Sciences Varanasi was fourth by overall ranking but twentieth according t reputation. Otherwise the reputation and ranking of the other top medica colleges were remarkably similar.

Overall Scores and Ranks

These are listed in Table I and the individual ranks according to teaching, research and reputation are shown in Table II in which we have also placed the colleges into 3 broad divisions according to their overall scores. The college for which we did not obtain data on teaching have been ranked separately on the basis of their research achievements and reputation alone. Ranking according to State is given in Table IV. Delhi seemed to have the best medical colleges and Bihar, Haryana, Madhya Pradesh and Manipur the worst.

Discussion

Our results suggest that the AIIMS is by far the best undergraduate medical college in India followed by Christian Medical College, Vellore; Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry, and the Institute of Medical Sciences, Varanasi. It was surprising that some of the colleges which were pre-eminent a few years ago like the institutions in West Bengal were not even represented in the top 20 but it was heartening to see that new institutions like the Kasturba Medical College, Manipal and the Sri Venkateswara Medical College, Tirupati had attained such high overall ranking.

Our study has certain obvious flaws. The first of these is that the authors are all from the institution which has obtained the highest rank. However, only one of us (PS) received his undergraduate training at the AIIMS and even besides reputation, which was a subjective assessment, according to all

Table III. The top 20 colleges ranked according to overall score and reputation

	Ranked according to overall score		*Ranked according to reputation*
1.	AIIMS, Delhi	1.	AIIMS, Delhi
2.	CMC, Vellore	2.	CMC, Vellore
3.	JIPMER, Pondicherry	3.	JIPMER, Pondicherry
4.	IMS, Varanasi	4.	AFMC, Pune
5.	KGMC, Lucknow	5.	MAMC, Delhi
6.	MAMC, Delhi	6.	KGMC, Lucknow
7.	MMC, Madras	7.	Grant MC, Bombay
8.	St. John's MC, Bangalore	8.	LHMC, Delhi
9.	LHMC, Delhi	9.	MMC, Madras
10.	CMC, Ludhiana	10.	KMC, Manipal
11.	KMC, Manipal	11.	SGSMC, Bombay
12.	AFMC, Pune	12.	St. John's MC. Bangalore

Table III Continued

13.	JNMC, Aligarh	13.	Stanley MC, Madras
14.	SVMC, Tirupati	14.	MC, Baroda
15.	SGSMC, Bombay	15.	KMC, Mangalore
16.	Grant MC, Bombay	16.	MC, Calcutta
17.	Stanley MC, Madras	17.	BJMC, Pune
18.	GMC, Srinagar	18.	MGIMS, Sevagram
19.	KMC, Bangalore	19.	Calcutta NMC, Calcutta
20.	MC, Trivandrum	19.	SMSMC, Jaipur
		20.	IMS, Varanasi

Table IV. State-wise ranking

Rank	*State*	*Number of colleges*	*Mean score*
1.	Delhi	4	43.28
2.	Pondicherry	1	40.4
3.	Jammu and Kashmir	2	20.3
4.	Uttar Pradesh	9	17.73
5.	Tamil Nadu	13	17.28
6.	Punjab	6	16.27
7.	Himachal Pradesh	1	16.1
8.	Rajasthan	5	15.86
9.	Kerala	5	14.28
10.	Assam	3	12.93
11.	Goa	1	12.7
12.	West Bengal	7	12.36
13.	Maharashtra	23	12.21
14.	Karnataka	19	12.14
15.	Orissa	3	12.07
16.	Andhra Pradesh	9	11.73
17.	Gujarat	6	11.22
18.	Bihar	9	11.19
19.	Haryana	2	11.1
20.	Madhya Pradesh	6	10.43
21.	Manipur	1	9

the other criteria we used, AIIMS was in the top rung. Perhaps other methods of grading such as the quality of the end-product or the ratio of the number of applicants to the number of places might have provided a truer index or reputation (this is used by the *US News and World Report)* . We felt, however, that we would not be able to assess the quality of doctors produced because there would be inadequate records and it would also mean entering into a controversial area. The student selectivity ratio, which is based on the students' preference of medical institutions in the USA, might not be fair in India. Most states conduct a common entrance examination for all their medical colleges and the proportion of reserved seats vary from 30% for Delhi to 70% for Tamil Nadu. Central institutions allow applications from all over the country.

The criteria we used may have some drawbacks. The data on faculty–student ratios might be inaccurate as they were not obtained from institutions themselves though not through want of trying (the faculty–student ratio of the AIIMS is even greater than the Harvard Medical School which is 6:1) and the figures for publications were based on a MEDLINE search for papers in which 'India' was included in the corresponding author's address. This may have left out papers in which only the names of the individual towns and cities was given. Our data on ICMR grants is 4 years old, because although we requested the organization to provide us more recent figures, they refused on the grounds it would serve no useful purpose. This surprised us because a publicly funded institution was unwilling to provide information on how it spent its money, a matter which we would have thought was of concern to all of us as citizens and taxpayers. The National Institutes of Health, USA, provide these statistics to *US News* and we hope that when we refine and update this study the ICMR data will be available. Nevertheless, it is unlikely that there have been radical changes in the ICMR's funding policy since 1991 and our statistics for their 1991 grant allocation suggests that, except in a few instances, the Council is not getting value for its money.

In spite of all its methodological drawbacks (which we hope will be minimized when we are provided more accurate information) we feel the overall picture that we have presented is fairly accurate and that there are only about 30 medical colleges in this country which provide a level of undergraduate training that should be acceptable to the general public. The causes for these low standards are well known and include the setting up of more and more new colleges as business ventures under the patronage of politicians, inadequate funding from the state as well as private sources, large reservations of seats for different categories of candidates who cannot compete on merit, payment of capitation fees for admissions and considerations other than competence being involved in faculty selection and promotion. We hope that some of these considerations will not reduce the quality of the colleges in the top ranks to the levels of those at the bottom but are apprehensive that this may already be occurring.

All is not lost. A similar situation existed in the USA in the early part of this century when there was a mushrooming of medical colleges of widely varying standards. The Carnegie Foundations then asked Dr. Abraham Flexner to suggest ways to improve the situation and after extensive travels in his own country and Europe, especially Germany which then led the world in medicine, he produced the famous Flexner report[4] in which he advised that many of the substandard colleges be closed and a powerful national body be set up to regularly monitor the quality of others. The government acted on Flexner's recommendations and American medical education has subsequently become amongst the best in the world. We urgently need similar action in India.

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Quality Assurance in Higher Education: An Indian Dilemma

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Abstract

Quality has become the touchstone in higher education all over the world. Indian higher education system, grown enormously in last five decades, is facing unprecedented problems. There is a question of credibility and there are doubts about the quality. The need of the hour is to go for assessment and accreditation of institutions of higher education. How should one go about this? What do we mean by quality in higher education? Can one think of a process that would be suitable for India? This presentation addresses such difficult but important questions.

Indexing Terms

Higher Education, Quality Assurance, Assessment and Accreditation.

Introduction

Higher education in India is undergoing a transformation. The reason for this is the changing, and increasingly paradoxical nature of relationship between society, government and higher education system. This change is mainly because of the expansion of higher education in India and also new demands on the system. From 23 universities, 700 colleges, 1,05,000 students, and 15,000 teachers in 1947, the system has grown into 223 universities, 8,210 colleges, 6 million students and 3,00,000 teachers. Such a rapid expansion is unprecedented in the world. This has resulted in a few good and a few bad things. On the good side is availability of institutions offering a variety of courses in varied disciplines and easy access to higher education. In science and technology, India has the worlds third largest reservoir of trained work-force. On the bad side is widespread dissatisfaction about the utility of higher education. It is true that the system has become unwieldy, incompetent, static and devoid of quality. It is neither able to achieve excellence in pursuit of truth and expansion of boundaries of knowledge nor is able to create an able and trained work-force to feed the emerging employment oriented egalitarian society.

The charges against higher education are many and varied. They include, creation of a passive and non-vibrant environment; absence of open and flexible approach; highly personalised way of dealing and even politicking in matters of appointments and administration. On the whole the opinion of people is heavily tilted against the Indian higher education system. Every element of society, be it intellectuals, scientists, industrialists, students and interestingly enough, even politicians, is worried but not knowing what needs to be done to improve matters, it continues to be a helpless spectator of the distressing scenario. There is a great need to introduce order and sanity into higher education. The advent of the 21st century, in the near future, calls for a drastically different approach.

It is interesting that higher education is in a flux throughout the world. The balance between elitism and mass participation is shifting towards the latter. In almost every country, there is an increasing pressure on the higher education system to equip students with not only the expertise derived from traditional academic programmes, but also to give students sufficient range of transferable skills to enable them to play more diversified and effective roles when they enter employment. Thus the institutions of higher education need to have a very clear understanding of what they are seeking to achieve through their academic programmes. In addition, whatever they do, need to be of quality. Now-a-days, in the education sector, much of the discussion and debate, which hitherto was focused on standards, has now shifted towards quality. It is a truism to say that quality has become the touchstone of the last two decades of the 20th century.

We all have an instinctive understanding, considering common sense and conventional wisdom, of what *Quality* means. It may be difficult to articulate it but one can quote the following passage from the Pirsigs book entitled *Zen* and the *Art of Motorcycle Maintenance.*

"QUALITY .... You know what it is, yet you do not know what it is. But that is self-contradictory. But some things are better than others, that

is, they have more quality. But when you try to say what the quality is, apart from the things that have it, it all goes poof! There is nothing to talk about. But if you cannot say what quality is, how do we know that it even exists? If no one knows what it is, then for all practical purposes it does not exist at all. But for practical purposes it really does exist. What else are the grades based on? Why else would people pay fortunes for some things and throw others in the trash pile? Obviously some things are better than others... but what is betterness? So round and round you go, spinning mental wheels and nowhere finding any place to get traction. What the hell is quality? What is it?"

This is "you-cannot-define-it-but-you-know-it-when-you-see-it" argument. Alexander Astin contends that there are four conventional views of excellence in quality higher education : excellence as resources, excellence as reputation, excellence as outcomes and excellence as content. After going into the merits and demerits of each of these views, Astin offers "a talent development" definition of quality. The most excellent institutions are, in his view, those that have the greatest impact - and the most values, economists would say - on the students' knowledge and personal development and on the faculty members' scholarly and pedagogical ability and productivity. Astin's definition tries to ascertain the difference [that education makes] in student's knowledge, skills and attitudes. A different definition is offered by Lewis Mayhew, Patric Ford and Dean Hubbard in the book The Quest for Quality. They say: "Quality undergraduate education consists of preparing learners through the use of words, numbers and abstract concepts to understand, cope with and positively influence the environment in which they find themselves. They believe that colleges and universities can have little effect on fundamental character traits such as honesty, optimism, or sense of humour. Those traits are formed much earlier and by different processes". Quality is always an elusive idea. However, egalitarian education reformers have grouped quality under the following headings:

- Quality as exceptional high standards
- Quality as perfection or consistency
- Quality as fitness for purpose
- Quality as value for money and
- Quality as transformation.

These are five ways of viewing quality in education. Traditionally, quality, in higher education, has been linked to the idea of exceptionally high standards ("*exceptional*"). A second approach to quality sees it in terms of consistency ("*perfection*") with reference to processes and sets of well defined criteria. A third approach to quality relates to *fitness for purpose*. In this approach quality is to be accepted as a relative concept, as different interest groups or beneficiaries: namely students, teachers, staff, parents, would-be-employers, funding agencies and society, have different priorities. A fourth approach to quality equates it with *value for money*. This factor brings in the idea of accountability, efficiency, and effectiveness. A fifth view of quality sees quality as *transformative*. Education is to be treated as an on going process of transformation of the learner (student).

With the plethora of definitions of quality, the best approach is simply to define quality as a multi-dimentional entity. This means a set of parameters needs to be identified which would encompass the entity in totality. One can define a set of criteria to further define each of the parameter at a micro- level. The information on these criteria and its analysis will help to decide the quality of a particular activity.

Defining Quality in Higher Education

How does one define quality in higher education? Can the Academics think of a better definition? Several attempts have been made to define quality in higher education. In the document produced by Higher Education Quality Council, an organisation in the UK, it is stated that "*quality in higher education is not the same as satisfying a customer with, for example, the latest motor car ....Quality in higher education embraces, but is not synonymous with effectiveness, efficiency and accountability.*" But can one really equate quality with efficiency or accountability or for that matter effectiveness? Education is not a commodity that can be looked upon as a mere product. It goes beyond and gives to a human not only skills, information and knowledge, but something more to make it an enriching experience. Moreover these terms have connotations of terms used in industry. In a manufacturing industry the input (the material), the process (the manufacturing mechanism) and the output (the product) is pre-defined and the user needs to be assured of the quality of the product. However, in education, every element: the input, the process and the output are human beings and cannot, therefore, be dealt with such a simplistic approach. Ellis states that quality itself is a somewhat ambiguous term (in higher education) since it has connotations of both standards and excellence. Most of the debates on quality end with synonymity between "quality" and "excellence." There is also a notion of quality as conformation to a standard or specification. Again, one can see that, the origin of the above statement is in the notions of quality control in manufacturing industry. In higher education, the term "standard" means a basis for measurement, or a "yardstick" to describe a required characteristic and this varies from nation to nation. Once the standards are decided, the institution can try to achieve Quality so as to possess such Excellence.

Thus one can see that defining quality in higher education is a difficult exercise. To a large extent the difficulty is understandable and even appropriate, given the nature and role of the institutions of higher education. For centuries they have served society, more or less effectively, by teaching what they have been asked to teach, to generate new thinking so as to broaden the frontiers of knowledge and to challenge the societal conditions and value structures. The universities were, then, organisations small and independent enough to manage their own affairs. In fact managing quality was done by the traditional elitist concept of standards. The last quarter of the twentieth century has brought about fundamental changes in the conditions of nations and also in higher education. In the post-modern era higher education has moved from a restricted to mass access and that too in a pluralistic system. The students and public in general do not view higher education as an effort merely to become "learned" but as a tool to prosper in their personal life so as to achieve higher living standards. The funding for higher education is mostly governmental and it too has brought newer controls into the picture. All this has changed the interrelationship between universities, government and society. Higher education is now looked upon as a service to society; hence the nature of quality control should hereafter reflect the needs and aspirations of the various beneficiaries. The definition of quality, therefore, becomes fitness for purpose. This means that rather than arguing for a precise definition, it would be advisable to accept quality as a relative concept, about which different beneficiaries have different notions because of their different priorities.

Measurement of Quality in Higher Education

Can one measure Quality? A 1990 issue of World features a lead article by George Fisher entitled "Measuring the Unmeasurable" that deals with quality assurance efforts at Motorola Corporation. The article reports that the Chair of Motorola started raising two questions at all levels of organisation and with its customers. The questions were: "what do you like about Motorola and what dont you like?" Jan Carlson in his book entitled *Moments of Truth*, a story about Scandinavian Airlines (SAS) has written "Every interaction between an employee of SAS - whether pilot, baggage handler, or reservation agent - is a "moment of truth" in presenting the service face of SAS. The reasoning behind the issues raised in the above examples pertaining to the corporate world is akin to the field of higher education when we look at it from the beneficiaries point of view. One has to look at the functioning of the institutions of higher education - academic and organisational - from a totality angle. This necessitates panopticon - the all-seeing eye - approach for assurance of quality in higher education. The full-blown panopticon in higher education system would have a three tiered nature: internal quality assurance mechanism, evaluation by peers, and accreditation by an independent and competent organisation. Universities, over the years, have developed remarkable capability to adjust with the changing conditions they are confronted with, without deviating from basic values and ideals. The ideals like search for truth and the pursuit of knowledge are the intrinsic qualities of the institutions of higher education. Because of their basic orientation towards knowledge, universities, irrespective of their geographical location and socio-economic environment, have to protect a few fundamental characteristics. They are the acceptance of:

- the authority of the academics to take decisions regarding the knowledge-oriented academic activities of teaching and research.
- the concept that knowledge areas form the basic foci of attention. This means that each area and the people connected with it are autonomous but are loosely connected with each other, thus making universities vibrant "loosely coupled system."
- the extreme diffusion of the decision-making power (decentralisation of authority) to make it (university) a federal system, and
- the location of authority mainly with academics.

The observance and protection of these fundamental characteristics - intrinsic qualities - is the prime duty of the University authorities. To know about the quality of a university one has to look for evidence that would reflect the state of intrinsic qualities in a university. Besides these, extrinsic qualities, which reflect its links with society, also need to be considered. The beneficiaries look at education from the view point of "fitness for purpose." The extrinsic dimensions focus our attention on the idea of accountability. Accountability means the requirement to demonstrate responsible actions to one more external constituency; in our the case, the beneficiaries.

The measurement of quality in a highly complex system like higher education needs to address itself to both the intrinsic and extrinsic requirements of universities. Several questions could be associated with the measurement of quality. What evidence will be an appropriate operational expression of quality? What evidence will reflect the performance? Once the evidences are identified, the question of performance standard arises. What level of performance will be required as demonstrating an appropriate level of quality? This means that one has to make a judgement with reference to possible choices for performance standards.

The measurement of quality, thus, embraces a good bit of work - selecting evidence, making provision for both acquisition and analysis of data, setting an appropriate standard of performance and setting up the mechanism to exercise judgements on performance.

Quality Revolution : A Crusade that Needs to be Faced

It is true that India's Higher education system has had a phenomenal growth but this is not a planned healthy development because it has been brought about by blind political expediency under the camouflage of meeting the aspiration of people and also to satisfy regional pride. It is also true that such an unprecedented expansion in the span of almost fifty years has allowed mediocre people to creep into the system and the system is being managed by persons, with no commitment except to use it for personal advancement and glorification. It is equally true that the so called intellectuals' and scientists' community, while shedding crocodile tears on the plight of higher education are willing neither to sacrifice their time nor to put in efforts for improving higher education. Thus, there is no action plan to improve it. It is more than true that governments' financial support to higher education will not go up dramatically in the future; the fear is that it may go down. It is unambiguously true that economic liberalisation, interest of other countries in Indian industry and economy, breaking of national boundary barriers because of the communication revolution, possibility of easy access to the better knowledge and education without leaving the country, are already established realities of today. Indian higher education is truly facing an unprecedented crisis and the academic community, the staff in the higher education system and the managers of education have no choice but to rise and work for assuring quality in higher education. Let the remaining period of this century be a period for the quest for quality so that the first decade in the 21st century would truly be the decade of quality.

Even though, there are many definitions of quality but, as far as India is concerned, *Quality* is 'fitness for the purpose' for which higher education is given to students. To put it another way, there will be diversity in opinion about quality depending upon the end use of the product and expectations from it. Thus, one needs to define and judge quality from what is appropriate. It would be wholly inappropriate to expect the American or British models to determine our expectations towards all types of higher education. But, we can learn much more by carefully analysing these and adapting them appropriately to suit our system.

How should one go about introducing quality assurance and control in India? What would be the best methodology and approach? It is here one needs to blend Western models with the Indian psyche. The well tried and accepted process is to undertake self study for appraising an institution's strengths and weaknesses in the frame of the goals and objectives of the institution; to subject the institution to peer review for critical testing and checking of the facts, figures and ideas presented in the self study document for achieving quality; and finally submitting the outcome in the form of a report with suggestions for achieving better quality. The last two steps should be left to an independent autonomous body – an assessment and accrediting agency – with the mandate of giving authenticity and credibility to the entire process.

Self study has become the backbone of the quality assessment, control and assurance mechanism. Self study in turn is based on goals, objectives and missions of higher education institutions. It is here the heterogeneity and complexity of Indian higher education system becomes an impediment. This is mainly because India has residential and affiliating, central and state universities, unitary "deemed" universities, specialised multi-disciplinary national institutions and also regional institutions. All institutions of higher education are established through legislation and have more or less simila preambles in their Acts. Their goals and objectives are, therefore, not very well defined in the Acts of the universities. The myth of highly and nobly worded preambles must be dispensed with and substituted with each institution's own goals and objectives uniquely suitable for the region it is serving, with a clear eye on the ever changing market scenario. This would allow each institution to determine its own ethos and the nature of its teaching programmes. This would not only enhance the capability to deal effectively with the emerging scenario of the future, but also allow each institution to define its target for quality standards. The important thing to note is that what was true in 1950's and 1960's is no more true now in respect of the needs of individual students and society. It was possible then to think of a higher education system catering to an economic and academic elite group within society, who in turn were expected to become the social and academic elite in the nation. Now it is the "mass" with varying social, intellectual and economic background which has to be catered to. This demands the tailoring of higher education for a much wider range of individual needs and future placement in the work force through a much wider diversity of offerings. What institutes need to do is to decide their own purposes and the utility to regions they are serving, because they need to produce the dedicated and trained members as demanded by the economy of the region. This does not mean that every university should do this; a few should in fact have the mission of producing highly trained manpower at par with those at the international level so as to meet the higher order challenges for the country. The point is that such an acceptance of diversity of aims and objective for different institutions would allow acceptance of variation in quality standards between one institution and another. The self study in this new frame-work becomes a much more meaningful and challenging exercise.

There are many other parameters, in addition to institutional goals and objectives that are the crucial components of self study documents. They are related to curriculum, teaching, learning, research and consultancy and they reflect mostly on the academic health of the institution. Operational parameters like organization and governance, student services and support services, infrastructure and generation and management of financial resources reveal the readiness of the institution to provide the best services with efficiency. It presents the total picture of the working of a university and is, therefore, most important when considering the quality of education in any institution.

The acceptance of self study concept, for the university, for each of the beneficiaries, namely students, teachers, parents, staff, employers, government and society, establishes a sound footing for quality achievement. The peer review exercise under such circumstances becomes very productive. Peers can, by virtue of their expertise and position, give meaning and credibility to the process of the evaluation of quality. It must be said that higher education is essentially an educative process. If we are seriously interested in initiating the quality ethos, then the only course left open is to adopt the professionalism of self critique under the mechanisms of panopticon, the all seeing eye. And it is here that the role of the teaching community acquires a new dimension. As the number of those participating in the higher education system increase, and as that increase is inevitably unmatched by an equal increase in unit funding, the quality and versatility of teaching will become ever more important. Moreover, the nature of the student body is becoming more and more varied, *albeit* more in relation to the social and educational backgrounds they have experienced than in relation to the innate talent they possess. Consequently, teaching will have to be highly skilled and appropriate to the diverse needs of the student population. We have all along been complaining about crowded classes and apathy on the part of students. But we probably have made too much of hue and cry only on this count. However, from diverse sources evidence has been piling up to show that the higher education system contains, and tolerates, too large a minority of teachers who are not delivering an acceptable service to their students. This clearly is not a position that should be allowed to continue. The ultimate guarantee of quality in the teaching process lies in the attitudes, knowledge and skills of the teachers. However, how is one to judge the skills of a teacher? In the higher education sector, the word of the teacher (about his/her performance in the class room) was accepted as final. However, we now need to develop and accept ways of collecting evidence about the performance of teachers. Now a days it is possible by more informal and supportive observations, coupled with external performance indicators, to formulate an informal judgement of an individual's teaching competence with sufficient accuracy. The common and standard reaction of teachers to a proposal for appraisal is of enormous anxiety. One can understand and even sympathize with the fear of the exposure of one's teaching competence vis–a –vis other teachers, but these initial worries could be surmounted with the help of responsible and supportive senior academics and a patient and helpful management.

The performance of the individual teachers is only one ingredient in the teaching quality of any institution. It is the totality of institution's functioning, which, as mentioned earlier, becomes critical for achieving quality. The overall claim and ethos of an institution is one of the major contributors to the richness of students' experience. Higher education is worth its name only if the institutions that offers it are vibrant with activities which enrich the quality of students' experience, be it academic or socio-cultural or on the play ground. Students need to understand the way in which their education would contribute to the socio-economic life of their country and they need to develop a sense of pride in their own potential for this contribution. An academic institution that, by ethos and attitudes, isolates itself from the world at large, fails to provide a sense of belonging and identity to its students.

This brings us back to the issue of "quality in education". Quality has to be "owned" by every member of the staff throughout the institution, if "education" is to carry any guarantee of reliably high standards. The recently formed National Assessment and Accreditation council (NAAC), as an independent autonomous body, plans to inculcate the spirit of "quality" through self study and external appraisal. It plans to do this as a voluntary process for achieving the best in a given environment. The process of assessment is going to be guided by rigorous self examination to understand merits and limitations. External evaluation by peers and practitioners of academics is to help measure the institution's own performance. It is not to be compared with other institutions. Periodic check ups help the healthy to maintain good health and the ailing to get timely diagnosis and treatment. Thus the process of assessment and accreditation is expected to progressively improve the quality of education.

Creating a dynamic commitment to quality in higher education is going to be a great and exciting challenge of the next decade. It is this quality that will deliver results in spite of diminishing finances, the unprecedented challenge of continuous expansion and change. We cannot afford to tarry much longer in the task of providing the country with an educational system of high quality geared to accept the challenges of the future.

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Determinants of Private Cost of Ph.D. Research : A Case Study

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Introduction

Education is a highly subsidized sector in all countries. More Specifically, the higher the level of education, the higher the subsidy. In this regard, India is not an exception.

In all countries, and at all levels of education, the students or their parents or gaurdians in their behalf, incur various costs to go through different courses of study. These are termed as "direct" private cost. In India, after the introduction of the New Education Policy in 1986 and more specifically after 1991, following the introduction of the New Economic Policy, there has been an ever intensifying discussion about the need for enhancing fees charged by educational institutions. It is argued that the element of subsidy should be reduced at the higher levels of education. In this context, some action has also been initiated in the recent past, in self financing institutions. At the universities level also, due to severe budgetary constraints, efforts are being made to raise a larger order of internal resources by an upward revision of the fee structure. In the above context and also otherwise, educational planners and policy makers are interested in looking at the private cost borne by researchers at the university level.

Objectives of the Study

This study was undertaken to estimate the private cost of Ph.D., researchers and identify its determinants, in Bharathiar University, Coimbatore.

Methodology

In order to estimate the components of private costs and also identify the determinants of Ph.D. education, a sample survey was conducted in Bharathiar University, Coimbatore (Tamil Nadu). The sample of 50 covered 50% of the total researcher population at Bharathiar University.

A pre-tested questionnaire was used to collect relevent information, such as the costs incurred per year on boarding, room rent and establishment charges, clothing, stationary, books, photocopying and other expenditures including footwear, entertainment, travel, toiletries. Thereafter, the averages of the components of the private cost were estimated using the arithmetic mean, standard deviation, maxima and minima. Total private cost was estimated by taking mean values for the above listed variables and also by imputing a mean value for the income forgone by researchers. Inclusion of forgone earnings of researchers ensure that the cost estimates cover not only the total private expenditure incurred but also the opportunity cost of research. The regression tool was used to analyse the impact of these determinants on the total private cost of researchers.

Survey of Literature

After Schultz and Becker had given prominence in their studies in 1960-64 for education as a form of investment in man, T.W. Schultz (1960), Vaizey & Sheehan (1958), Mark Blaug (1996), George Psacharopoulos (1979) and a host of others carried out studies about the role of education in economic development, studies on Economic aspects of education such as investment in Education, Rate of Returns and Demand for Education, received increasing attention of the economists.

One aspect of such studies relates to be rate of return on investment in education at different levels. Parts of such studies lead to social and private cost of education. There are a number of such studies both at the international, National, and State Level carried out by A.M. Nalla Gounder (1967), Kothari (1967), Loganathan (1981), Venkita Subramaniam, Arumugam (1983), Thangarathinam (1979), and Ramamurthy (1993), Bu no study has been made on the private cost of Ph.D. research at Universit level. Hence this study was carried out. Because of the problems o collecting relevant data from individuals, there have been relatively fe studies on the private cost while many studies have worked into social costs

Received literature presents two divergent views on the inclusion o opportunity costs or earnings forgone by students for estimating private costs. The main argument against inclusion of forgone earnings is that their relevence is open to question in the context of large scale unemployment. Also, there is an apprehension that considering forgone earnings for estimating costs will exaggerate the estimation. But now this can be considered because of the possibility of making adjustments for the probability of a candidate with Post Graduate M.Phil. qualification securing employment and also estimating the income which would accrue if employment is secured.

Components of the Private Cost

Before undertaking the detailed analysis of the determinants of private cost of Ph.D. Research, it would appear relevent to analyse its components. The important components of the private total cost are the cost of boarding, room rent and establishment charges, clothing, books & stationary, photo copying and other items of expenditures including footwear, entertainment, travel, toiletries etc. The cost of food and room rent normally apply to the hostelers. However non-hostelers or day scholars are also incurring expenses on food and housing by sharing the common kitchen and the rooms in their houses. So, we can impute values for the share of cost of food and room rent for the day scholars also. Therefore, in order to assess a value for these variables 60% of the mean cost of food and room rent incurred by the hostelers were taken into account for the calender year 1993 as the cost on these items for those living with their families are normally lower than those incurred by a hostelers. Using the collected data from the Ph.D. scholars of Bharathiar University the following table was formulated.

Table 1
The Components of the Private Cost

The Variables	*Mean in Rs.*	*S.D.*	*Min*	*Max*
Tuition fee	1,000	0	1,000	1,000
Books, Stationary & Photo copying	5,458	3,824	900	18,000
Boarding	8,844	3,970	4,500	14,400
Room Rent & Est.	2,292	1,219	960	9,600
Clothing	1,606	1,136	400	4,400
Other Expenditure	4,908	2,437	600	11,400

Table 1 (Continued)

The Variables	*Mean in Rs.*	*S.D.*	*Min*	*Max*
Forgone Earnings	2,340	282	0	7,200
Total cost with forgone earnings	24,110	6,950	23,230	40,012

Table 1 shows that the average cost of Boarding incurred by the scholar was Rs. 8,844 per annum. It had a standard deviation of Rs. 3,970 among different scholars. The minimum boarding expenses incurred by the scholars was Rs. 4,500 and the maximum was Rs. 14,400 per annum.

The Scholars pay, on the average Rs. 2,292 per year as room rent and establishment charges. The standard deviation of the room rent was estimated to be Rs. 1,219. The room rent and the establishment charges varied between a minimum of Rs. 960.00 and maximum of Rs. 9600 per year. This includes the electricity charges, salaries of servants and other service charges inlcuded in the hostel maintenance cost. The average expenditure of the researcher on clothing is Rs. 1,606 per year with a deviation of Rs. 1,136 and a maximum of Rs. 4,400 per year. The average cost of buying books, journals, stationary and photo copying were estimated to be Rs. 5,458 per year. This item had a standard deviation of Rs. 3,824 per annum. There are a wide variation between the research scholars in the expenditure under this catagory, depending upon the stage of the progress of their research work. When a researcher is in the final stages the costs on these item escalates as he/she has to pay for papers, binding, printing and copying. Similarly at the time of field work, researchers have to incur more expenses on travel. The mean of other expenditures which included cosmetics, travel, toiletries and entertainment expenditure amounted to Rs. 4,908 with a deviation of Rs. 2,437 and a maximum of Rs. 11,400 per year.

We have already justified the inclusion of forgone earnings in the estimation of private costs. The forgone earnings of a Ph.D. researcher are computed by taking into consideration the earnings of the M.Phil. or Post Graduate degree holders in their respective disciplines. Since these are the minimum qualification prescribed to enter Ph.D. research. It is common knowledge that a wide variety of jobs can become available to people with the above mentioned qualifications. Employment secured by these scholars vary according to their branches of study. In branches like Computer Science, Electronics, Chemistry, Physics, Mathematics, etc., demand is greater than the demand for scholars of other branches.

In the case of M.Phil degree holders and others qualified for lecturership in the UGC conducted examinations, earnings are around Rs. 5000 per month. However, the number of people qualifying in these tests or securing lecturerships is relatively small as compared to the number of post-graduates entering the labour market.

Though recruitment in the government services has been very low in the recent past, employment opportunities have registered some growth in the private and the informal sectors. The probability of an M.Phil/Post Graduate securing a job in 1993 was 40% in Coimbatore District. The potential earnings of such a person were Rs. 1500 p.m. such jobs were available throughout the year. So the actual potential earnings with the 40% employment opportunity was Rs. 600 per month.

At the University level, different agencies such as UGC/ CSIR/ ICSSR/ ISRO/Planning Commission/Private Industries etc., are funding research. Part of such funds are used to provide assistance to research scholars. UGC also provides monetary assistance to the College Teachers to enable them to qualify for the Ph.D. research degree under Faculty Improvement Program. Respective Universities also provide Fellowships at the University level to encourage research.

Apart from these three groups, the fourth group of researchers are doing research without any assistance. This group really forgoes the earnings. In the population of this study 34% belonged to this category.

The researchers receive assistance ranging from Rs. 850 to Rs. 3245 p.m., depending upon the funding agencies. Their private costs do not include the forgone earnings. Only for those who do not receive any fellowship the forgone earnings of Rs. 7200 p.a. had been imputed and added with the direct private cost.

With these forgone earnings the total cost of Ph.D. research was estimated to be Rs. 24,110 per annum with the standard deviation being Rs. 6,950. The minima and maxima, however, were Rs. 23,250 and Rs. 40.012 respectively. Such was the case of the constituents of the private cost.

After the estimation of the private cost by collecting the data directly under different heads, the indirect factors influencing the private cost were identified.

Determinants of the Private Cost

Calculation of unit cost of different levels of education has been done by various researchers. But it is common knowledge that private unit costs differ between different students. It would be useful for the policy makers to learn about the determinant factors of unit cost, specially private unit cost, would be of great use. Some of the factors which may influence private costs to the researchers are:—(1) household income; (2) discipline or branch of study; (3) fellowship received; (4) gender; (5) age of the scholar; and (6) family size. To find the influence of these factors on private costs, regression analysis would be useful to estimate the extent of their impact.

Rationale for the above factors

The variable age was chosen because, in the sample, though the average age of the researcher was found to be 27, the youngest scholar was 23 years old and the oldest scholar was 43 years old. The researchers with higher age were mostly full fledged lecturers from many colleges in and around the district. They visited their employing institutions quite often. This tended to increase their private costs. So age was considered as a relevant variable for the study.

We have taken the size of the family of the researcher as one of the determinants because there is a possibility of a researcher getting lesser assistance from parents if the size of his family is large. Hence this variable has been considered for the study.

The scholars do receive scholarships/fellowships/grants from the other funding agencies such as UGC/CSIR/DST etc., Such assistance is a big boon for the research activities in Universities as also for individual researchers. To estimate the influence of these variables on the total cost this variable has also been included in this model.

It is an established fact that income has a positive correlation with consumption and other expenditures. So here we have related household income to the private cost even though it would have been more appropriate to relate it to the household expenditure. We have considered the income variable only for want of information about the household expenditure.

It has been observed that the discipline of the scholar also influences the total cost. The students from the science disciplines spend more on chemicals and other experimental requirements, whereas the arts students spend more on collection of data, photocopying etc.,. So a dichotomous variable was introduced to find out whether the students from arts or science incurred more costs.

The gender difference also had its influence on the private cost. Variation in the cost on food, entertainment and other expenditure were observed. On all the items women scholars spent less than men.

So a model was formed to identify the extent of the influence of these variables on the total private cost of doing research in the City of Coimbatore.

The Model

The functional form of the model is

TC = F [S, A, D, F, G, H]

where

S — Sex of the scholar

A — Age of the scholar

D — Discipline to which the scholar belongs

F — Family size of the scholar

G — Fellowship or grant received by the scholar

H — Total Household income

The data collected from the researchers were fitted into a regression model and thereafter the results obtained were compiled.

The coefficients of some of the variables were found to have a negative sign. The results of the analysis are presented in table 2.

Table 2
Coefficients of the Determinants

The Variables	*Coefficients*	*STD Error*	*Students 't'*
Constant	601.79	29,462.00	0.02
Sex	15,461.00	6728.70	2.30
Age	1,139.70	953.00	1.20
Discipline	1,392.50	7281.30	–0.19
Family Size	1,684.30	1951.80	0.86
Grant	– 0.45317	0.20630	–2.20
H. H. Income	0.02478	0.04017	0.62

In the model the sex and the discipline of the scholar were dichotomous variables. The rest of the variabls were continuous variables. One of the independent variable chosen was the total household income. This variable was chosen instead of the total household expenditure because credible information was not available about the entire volume of the household consumption. The Degree of freedom was 42. The estimated R squared was 0.2181. The adjusted R squared was 0.1090. Though the explanatory power of the model was less the importance of some of the variables chosen for the study can be identified.

The results of the regression are presented in Table 2. In this analysis the sex and discipline are dichotomous variables. Contrary to expectations, it was found that the sign of the coefficients of discipline and grant variables were negative. The negative sign of these variables reveal that the researcher in science discipline spends less than the social science researcher. Similarly the negative sign of the variable Fellowship or grant indicate that on the average a researcher who receives a fellowship spends more than the one who does not receive such assistance. Moreover, in the sample, most of the researchers who received the fellowships came from the science streams. So, in general, social sciences scholars were found to spend more than the science scholars. This could be attributed to the fact that better facilities were available to the science students.

The positive sign of the coefficient for the variable for sex indicates that the male researchers on the average spend more. The results indicate the positive effects of age, family size and house hold income on the private costs. So when there is increase in age, private cost also would increase. Similarly when the size of the family was larger the private cost of the researcher also increased. This is contrary to the expectation. But the positive relationship between the household income and the private cost of the researcher reveals a reasonable relationship.

As far as the significance of the variables are concerned in this study it was found that only two variables namely Sex and Grant were significant. It was found that the recipients of grants were more careful regarding their private costs than the non recipients of grants.

Conclusion

This study was undertaken with the aim of calculating the private cost of Ph.D. research and the determinants of the total private cost. The study revealed that the sample research scholars belonged to the income group of between Rs. 24,000 and Rs. 50,040 per annum. The average age of the researcher was estimated to be 27. The average expenses on room rent was found to be Rs. 2292 per annum. The average expenses on clothing was estimated at Rs. 1,606. The mean expenditure on books, photo copying and stationary expenditure amounted to Rs. 5,458 per year. Other expenditures including travel, toiletries, cosmetics and entertainments was Rs. 4,908. The tuition fee was on the average Rs. 1,000. The average earnings forgone per year were Rs. 2,340. The determinants of the Private cost was analysed with a view to know the role of sex, age, discipline, family size and household income in influencing private cost. It was found that within the sample, men spent more than the women researchers. Researches who receive fellowships spent less than those who did not receive any fellowship. Moreover the researchers of humanities and social sciences spend more than the researchers of the science subjects. This study has found that the average private cost of Ph.D. education in Coimbatore was Rs. 24,110. This also included forgone earnings of Rs. 7,200 per annum for those who did not receive any fellowship.

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Privatization of Higher Education in India — Some Lessons from USA

MRIDULA SHARMA

The System

Institutions: The system of higher education in India (as per 1991-92 data base) has 7121 colleges, 177 universities and 29 deemed to be universities. Among these, 9 universities came into existence by the Acts of the Parliament. These, therefore are Central universities. The remaining 139 universities, termed as State universities, were established by the Acts of State Legislatures. Of the total of 7121 colleges, 76% (i.e. 5411) are privately managed (Table 1). The privately managed colleges are governed by specially constituted governing bodies to which nominees of the governments may also be appointed.

Table 1

Number of Colleges and Universities in India and U.S.A. (1991-92)

Type of Colleges/ Universities	*India*	*U.S.A.*
Private/Privately managed colleges	5411	1941
Public/Govt. Colleges	1710	1504
Total Colleges	7121	3445
Private/Privately managed universities	—	62
Public/central state universities	206	94
Total Universities	206	156
Total Institutions of Higher Education	7321	3601

Source: For USA HEGIS and IPEDS Finance Surveys Fiscal Years 1982-1992.

The system of higher education in United States comprises 3601 institutions in all. Of these private and public institutions account for 56% and 44% respectively. Of the 2003 private institutions 1496 are four year colleges, 445 are 2 year colleges and 62 are universities. Of the 1598 public institutions, 505 are four year colleges, 999 are two year colleges and 94 are universities.

Enrollment

The Indian system has a total enrollment of 4.6 million students. This number accounts for only 4% of the population in the age group 17 - 23 years. Of the total enrollment in higher education, 83% was accounted for by colleges and remaining 17% by university departments.

The Institutions of higher education in U.S.A. Enrol nearly 13.7 million students in all, accounting for 38.3% of the population of the age group 18-23. Of the total enrollment, 78% (10.7 million) are enrolled in public institutions and the remaining 22% (2.9 million) are with private institutions.

Table 2

Enrollment in Higher Education Sector in India and USA

	INDIA	*USA*
Total No. of students Enrolled	4.6 millions	13.7 millions
Percentage of students enrolled in Higher Education in the relevant age group (i.e. 17 to 23 for India and 18-23 for USA)	4%	38.3%

Teachers

The number of teachers in the Higher Education system in India had reached 263 lakhs (26.3 million) by the end of 1990. Of these, 0.59 lakhs were in the university Departments/university colleges and rest were with the affiliated colleges. Of the 58,661 teachers in universities, 7509 were professors, 15,369 were Readers, 33,437 were lecturers and 2,346 were tutors/demonstrators.In affiliated colleges the number of senior teachers was only 28,421 whereas the number of lecturers and of tutors/demonstrators was 1,67,047 and 8,996 respectively.

The U.S. system of Higher Education, as on 1989-90, employed nearly 2.5 million persons including 1.5 million professionals and 0.9 million non professionals. About 40% of the staff were teachers or teaching assistants, 22% were non teaching assistants, 18% were clerical and secretarial staff and remaining 20% (or five lakhs) were professionals.

Funding

Major Sources

Major sources of funding of public institutions of higher education in India as well as in the U.S.A. are almost similar. The governments bear the maximum burden of total funding in both the countries. Figures for the contribution of fees in the total funding of both the countries are quite comparable. However the contribution of income from endowments is relatively greater in India. On the other hand, sales and services contribute almost 1/5th of the total funding of the public institutions of higher education in U.S.A. In India, the contribution of sales and services in the total funding is negligible. Details of the contribution of different sources of funding in both the countries are given below:

Table 3

Financing of Higher Education in India and U.S.A. by various sources 1985-1986

	Sources	*India*	*U.S.A.*
1.	Fee Income	13%	14%
2.	Govt. and Federal Grants	75%	58%
3.	Private gifts, grants, contracts, local bodies share	1%	3%
4.	Endowments	5%	1%
5.	Sales and Services	—	21%
6.	University Funds	6%	—
	Aggregate from all sources	100%	100%

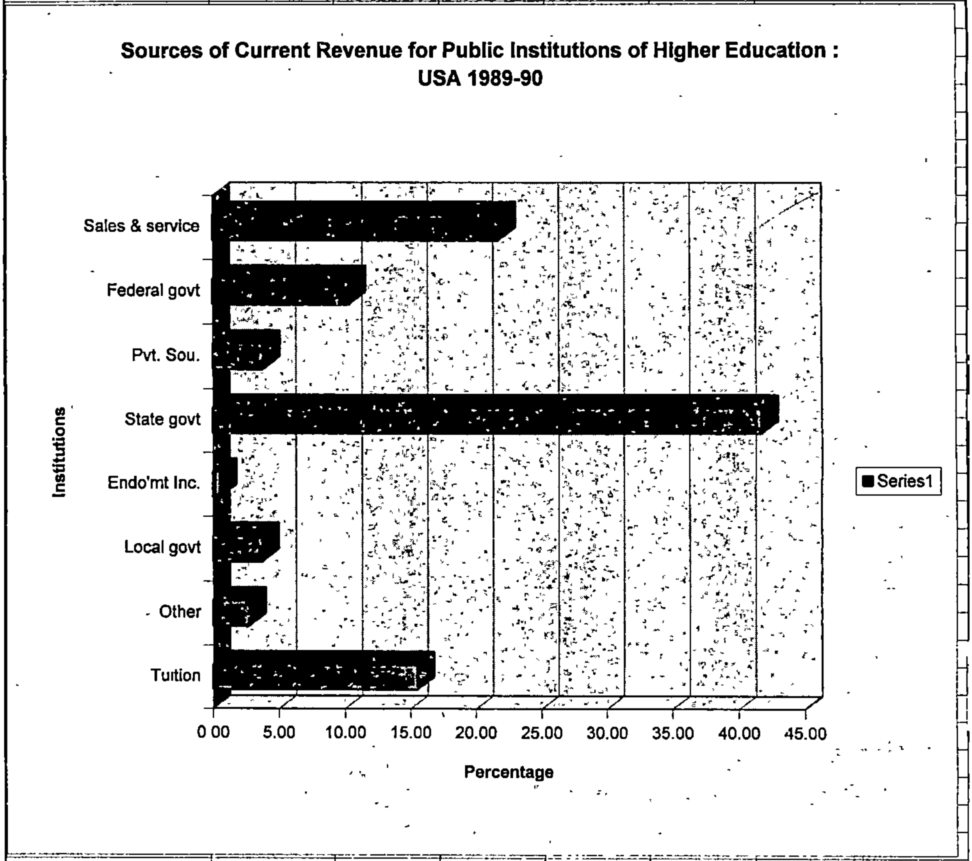
Source: For USA, HEGIS and IPEDS "Finance" Surveys. Fiscal Year 1985-86 For India, Education in India, Vol-II(c) MHRD, 1985-86 Govt. of India, New Delhi

Note: Data on this aspect beyond 1985-86 are not available for India

Government Share

In India, the Institutions of Higher Education (both government as well as private) receive subventions for their revenue i.e. maintenance requirements and other funds mainly from the government. The governments provide financial assistance to these institutions in the form of grant-in-aid. This is given mainly for two types of activities; recurring activities and developmental activities. Block or maintenance grant is provided for recurring activities while development grant is provided for developmental activities. Central universities receive both maintenance as well as developmental grants from the central government, through the University Grants Commission (UGC). State Universities, on the other hand, receive maintenance grants from the state governments. The State

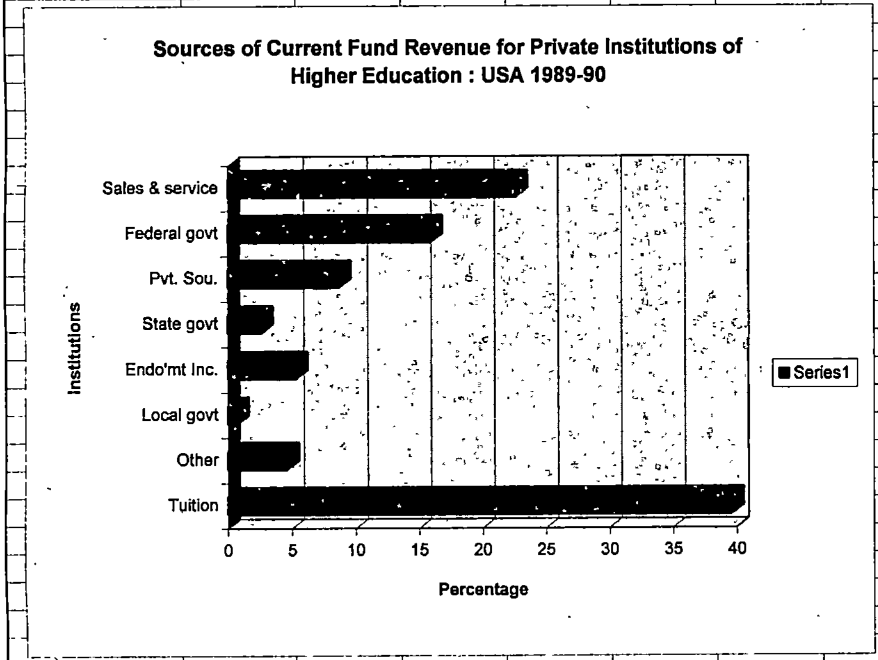
Tuition	**15.50**
Other	**2.70**
Local govt	**3.70**
Endo'mt Inc.	**0.50**
State govt	**41.70**
Pvt. Sou.	**3.80**
Federal govt	**10.30**
Sales & service	**21.70**



Source : US Deparetment of Education. National Centre for Education Statistics Integrated Post Secondary Education Systems (IPEDS) Finance. FY-1989 Survey

Fig. I

Tuition	**39.6**
Other	**4.6**
Local govt	**0.7**
Endo'mt Inc.	**5.3**
State govt	**2.6**
Pvt. Sou.	**8.7**
Federal govt	**15.9**
Sales & service	**22.6**



Source : US Deparetment of Education. National Centre for Education Statistics Integrated Post Secondary Education Systems (IPEDS) Finance. FY-1989 Survey

Fig. II

universities and colleges also receive some central funds through the UGC for developmental activities through a somewhat complex procedure. The developmental grants provided to the state universities are usually conditional. For example, a state university generally has to assure the UGC that it would be getting a matching grant from the state government also. Sometimes an assurance is obtained to the effect that after five years operation of a development scheme, the state govt. would assume the responsibility of funding the maintenance expenditure on the item for which developmental grants is sought from the Central Govt. or the UGC. As far as colleges are concerned, these depend on the central and state governments for most of their maintenance as well as developmental needs. The colleges also mobilises some resources through fees, donations, endowments etc.

Of the total funding for the institutions of higher education in India from all sources, government sources account for 75%. Out of the total government sources, the central government's contribution account for only 11 per cent. If central government and UGC are put together, the largesse provided by them would account for only 18% in the total government funding for higher education in India. The remaining 57% comes from the state government sources.

Table 4

Percentage Contribution of Fees, Govt. Grants, U.G.C. subventions and other sources in the total funding of Higher Education in India, 1986

	Sources	*Percentage Share*
1.	Central Govt.	11
2.	State Govt.	57
3.	U.G.C.	7
4.	Tuition Fee	7
5.	Hostel Fee	1
6.	Other Fee	5
7.	Local Bodies	1
8.	Endowments	5
9.	University Fund	6
	All sources	100
	(amount in thousands Rs.)	1,81,65,743

Source: Education in India, Vol. II (c) 1985-86, MHRD, Govt. of India, New Delhi

Note: Data beyond 1986 are not available.

Public Institutions of higher education in the USA receive major portion of their total income for maintenance from government sources. Figure I giving details about the relative share of government in the total funding of US system of higher education indicate that the share of the government, including the federal, state and local governments accounted for 54% of the total current revenues for public institutions during 1989-90. In contrast to this, private institutions received only 32% of their current revenue funding from government sources.

Fee Contribution

Fees in India account for 13% of the total funding of the institutions of higher education in general. Within this, tuition fees, Hostel fees and other fees account for 7%,1% and 5% respectively. This fee structure does not represent the fee structure of private (Capitation fee) colleges.

The tuition charges in the prestigious private institutions of higher education in U.S.A. are very high. Some estimates about the tuition fees charged by these private institutions have been made by M.Glen Johnson in his paper entitled "The American Experience of self-financed universities: lessons for India". The author estimated that the tuition fee at some private colleges and universities is around 20,000 dollars per year, the comprehensive charges approaching nearly $30,000 per year when room, board and other costs are included. The average tuition charge from an under-graduate at a private 4 years college was found to be $10,017 in 1991-92. As against this, the average family income during the same year was around 35,000 dollars.

Because of such a high cost, education at the private institution went out of the reach of an average American family. However, even such a situation could not be sustained on the grounds of equity; even in the U.S., no institution could afford to follow the policy of catering only to the needs of the affluent. Hence, mechanism were devised for helping the self-financed institutions to enable the entry of relatively less affluent students. For this, financial aid to students became a major source of indirect funding in 1986-87. Nearly 80% of the students enrolling in the institutions of higher education received aid from federal government sources; almost half of them received aid through the institution itself. Sometimes, the rich parents (sending their children to expensive institutions) were asked to pay more than the normal fees so that financial aid could be given to the less well-of students studying in the same institution.

Table 6

Financial Aid to Full-time American Students 1986-87

	Percentage of students receiving Aids by Source				
	Any aid	*Federal*	*States*	*Institutional*	*Others*
Under-Graduate Level					
All Institutions	53.2	47.7	22.1	21.4	7.3
Private Institutions	73.4	73.4	57.0	31.4	48.2
Public Institutions	52.3	41.9	19,4	13.2	6.5
Masters Level					
All Institutions	68.7	31.9	6.2	47.6	5.9
Private Institutions	70.6	36.1	6.2	47.1	7.9
Public Institusions	67.5	29.3	6.1	48.0	4.9
Doctoral Level					
All Institutions	87.9	22.9	5.6	76.3	6.3
Private Institutions	84.7	23.7	3.4	74.5	6.0
Public Institutions	89.9	23.5	7.0	77.5	6.5

Source: M.Glen Johnson - The American experience of Self- Financed Universities, Lessons for India, University News, October 1992.

If one reflects upon the above data, it becomes apparent that in the U.S.A. private institutions charging high tuition fees are, inter-alia, being funded indirectly through government aid to students so that the system of higher education in America also has become, more or less, a state supported system.

Trend

In India, over a period of 30 years, i.e., between 1956-57 and 1985, the share of the Government in the total funding of the institutions of higher education has shown an increase from 50% to 76%. Against this, during this period, the share of fees from students has shown a decline from 39.34 to 13%. The share of other sources, namely, local bodies' funds and endowments etc. have also shown a declining trend during this period.

Table 7

Sources of Income of all Educational Institutions of Higher Education in India during 1956-86

(in percent)

Year	*Govt. and Local Bodies Funds*	*Uni. Funds*	*Fees*	*Endowments & other sources*	*Total*
1956	50.17	—	39.34	10.89	100.00
1966	60.08	2.87	27.92	9.13	100.00
1986	76.00	6.00	13.00	5.00	100.00

Source:Education in India, Volumes 11(c) 1956-57, 1966-67, 1985-36, MHRD, Govt. of India, New Delhi

Note:Data beyond 1986 are not available in the same pattern.

The total amount disbursed as current revenue funding for all institutions of higher education in USA has increased from approximately 95 billion dollars in 1982 to 140 billion dollars in 1990. It should be noted that revenues have always been much more than the expenditure of institutions. All sources of funding in the institutions of higher education have shown an upward trend between 1981-82 and 1989-90.

The relative share of different sources in the current revenue resources of both the private and the public institutions of higher education are given in Table-8. It will be observed that in the decade of 80s the share of Tuition and other fees in USA has increased only by 2 percent for public as well as private institutions of higher education. The share of the state governments declined from 44% in 1982 to 42% in 1990 for public institutions but increased slightly by (2-3%) for private institutions. The federal government's share declined for both types of the institutions. The share of local governments in the total revenue funding has also remained almost the same during 1982-1990 for both public as well as private institutions of higher education. Income from sales and services has registered slightly declining trend but remained at the same level at 21%, for public institutions during 1982-1990. The relative share of private gifts, grants, and contracts has increased from 3% to 4% for public institutions and declined by 1% for private institutions.

Table 8

Current funds revenues of Institutions of Higher Education in constant Dollars by source 1981-82 — 1989-90

(in percentage)

	Sources	*1981-82*			*1985-1986*			*1989-90*		
		1	2	3	1	2	3	1	2	3
1.	Tuition Fee	14	38	23	14	39	23	15	40	24
2.	Federal Grant	11	17	13	10	17	13	10	16	12
3.	State Govt.	44	2	30	44	2	30	42	3	28
4.	Local Govt.	4	1	3	4	1	3	4	1	3
5.	Private Gift Grant and Contracts	3	9	5	3	9	5	4	8	6
6.	Endowment Income	1	5	1	1	5	2	1	6	2
7.	Sales and Service	21	24	20	21	23	21	21	23	22

Source: HEGIS and IPEDS "Finance" Surveys Fiscal Years 1982-1990

1. *Public Institution*
2. *Private Institution*
3. *Total Institution*

Funding of R and D

Research and Development (R & D) in India as well as the USA is financed mainly by the government. In India, the central government is the main source of funding of R & D, whereas 15 federal agencies of USA recorded the maximum share of R & D obligations to universities, colleges, academic system offices and independent non-profit institutions engaged in R & D. The data on this aspect are available on absolutely different formats for the two countries i.e India and the USA . This limitation makes the comparison of the pattern of funding of R & D in both the countries rather difficult. We have, therefore, discussed the funding of R & D in both the countries separately and according to the availability of data.

Finances for Research and Development of scientific and technological activities in India comes mainly from government sources. The central government has all along been the main source (81% in 1970-71 to 79% in 1990-91) of funding of R & D activities in science and technology. The share of state government in the total funding of R & D has remained in between 8% and 9% during 1970-71 to 1990-91. The private sector accounted for 10% of the total funding for R & D in science and technology in 1970-71; It's share increased to 16% in 1980-81 but declined to 13% during 1990-91.

Table 9

National Expenditure On Research And Development By Sectors

(in percentage)

Sector	*RESEARCH AND DEVELOPMENT EXP.* 1970-71	1980-81	1990-91
Central Sector	81	76	77.9
State Sector	9	8	8
Private Sector	10	16	13
Total	100	100	100
Amount in crores of Rs.	139.64	760.52	4186.43

Calculated from the data available in R & D statistics of D.S.T, Govt. of India, New Delhi, 1990-91.

From the data in Table 10, it is apparent that only a small proportion of R & D resources has followed to Medical Research, environment, Bio-Technology, Non-Conventional Energy, Electronics or even the Department of Science and Technology. On the other hand, the bulk of the founding on R & D has been used to support the applied aspects of the scientific research. As much as 66% of the resources of total R & D funding by the central government was used for applied research and experimental development.

Table 10

Expenditure on Research and Development by Major Scientific Agencies Under the Central Govt.

Agency	*PERCENTAGE SHARE IN RESEARCH AND DEV.* 1970-71	1980-81	1990-91
Department of Atomic Energy	32	17	11
Council for Scientific and Industrial Research	24	16	10
Defence Research and Development Organisation	20	18	28
Indian Council for Agricultural Research	21	22	13
Indian Council for Medical Research	2	2	2

(Table 10 Continued)

Agency	*1970-71*	*1980-81*	1990-91
Department of Science and Technology	1	9	7
Department of Space	—	13	16
Department of Electronics	—	1	1
Department of Env.	—	1	8
Department of Ocean Development	—	—	1
Department of Non- Conventional	—	1	1
Department of Bio-Technology	—	—	2
Aggregate	100	100	100
Amount in Lakhs of Rs.	8,921.45	43,842.82	2,49,308.90

Source: Annual Reports of D.S.T, 1990-91, Govt. of India, New Delhi.

Note: Not including public sector R & D Exp.

Similarly more than half of 8% of the total resources of state govt. have been utilised for applied research and experimental development. Table 11.

Table 11

Science and Technology Expenditure by Type of Work by Central and State Government (1990-91)

Types of Research	*Percentage Share of Central and State Govt.*		
	Central Govt.	*State Govt.*	*Total (central + State)*
Basic Research	13	1	14
Applied Research	33	6	39
Experimental Devp	33	2	35
Other related science and technology activities	10	2	12
Aggregate	89	11	100
Amount in lakhs of Rs.	3,23,871.60	40,751.24	3,64,622.84

Source:Table prepared from statistics collected by D.S.T., New Delhi
Note:1. R & D.: Research and Development - basic research + applied research central + State experimental devep.
2. S & T: Science & Technology - R & D + other related science and technology activities

Within different fields of sciences, major thrust of the central government, and private sector has been on R & D in Engineering and Technology. The Central Government, as well as the private sector allocated nearly 55% of the total R & D resources in the area of Engineering and Technology. This was followed by Natural Sciences for which the Central Government and the private sector allocated respectively 30% and 24% of the total R & D resources. The state governments allocated the maximum (88%) of their R & D resources in the area of Agricultural Science. Table - 12

Table 12

Expenditure on Research and Development by Field of Science - 1990-91

Field of Science	Percentage Share			
	Central Govt.	State Govt.	Private	Total
Natural Scince	30	3	24	31
Engineering and Technology	54	7	56	49
Medical Science	3	1	14	3
Agriculture Science	12	88	6	16
Others	1	1	—	1
Aggragate	100	100	100	100
Amount in Lakhs of Rs.	332811.40	33209.46	51266.22	417287.08

Source: Table prepared from data collected and compiled by D.S.T, Govt. of India, New Delhi

The federal support for S & E, Research and Development at universities and colleges in USA comes mainly from 15 federal agencies. In 1990 these 15 agencies recorded obligations to 2417 universities and colleges, 39 academic system offices and 895 independent non-profit and college institutions engaged in S & E research and development. These obligations were mainly in the form of the amounts representing orders placed, contracts awarded, services received and similar transactions during the given period. Obligations differ from expenditures as the funds allocated by federal agencies during one fiscal year may be spent by recipient institution either partially or entirely during one or more subsequent years.

Federal support for S & E research and development in U.S.A. is given for two types of activities, namely, academic science and engineering activities, and non-science and engineering activities. These include : (i) obligations for R & D, (ii) R & D Plant, (iii) facilities and equipment for S & E instruction, (iv) fellowships, trainee ships and training grants, (v) general support for science and engineering; and (vi) other S & E activities. Non science and engineering activities include all other obligations which are excluded from the above six categories of academic S & E activities, i.e., obligations for research education and facilities for arts and humanities as well as generalised projects for which the proportion utilised for S & E activities is not known.

The obligations amounting to 15.2 billion dollars were marked for science and technology research and development activities. 80% had gone to the institutions granting Doctorate and Masters as their highest degrees and 6% to the institutions granting Bachelors degree in science and engineering. The remaining 7% of the federal obligations were confined to the institutions which did not grant any degree directly in science and engineering. Among the public and private institutions more federal obligations were made for public institutions than for the private institutions. Table - 13.

It can be seen from the Table that out of the total obligations marked for various activities of science and engineering, public institutions accounted for nearly 60% and the private institutions for 40%.

Federal obligations for all Science and Engineering research and development activities have gone up tremendously over the last two decades. Table 14 gives the trends of increases in the federal obligations for various categories of S & E research and development activities during 1970-90. It will be seen from the table that total federal obligations for these activities increased by 369% during 1970 to 1990. For research and development in particulars, the obligations increased by 524% during the same period. Even for non S & E activities the federal obligations have gone up by 352% during 1970-1990 (Table 14).

Privatization: Some Implications

Recent policies of the government for liberalization have called inter alia for reduction in government subsidies for the provision of higher education through the realization of a larger share of costs form the beneficiaries. If these policies are pursued without due deliberation, we may reach a point when education would be available only to those who can afford to pay the full costs of it. Capitation fee colleges are an example of such a policy. By now quite a few states, specially in Southern India have one to two dozen of capitation fee colleges. Admission to such colleges is governed

TABLE 13

Federal Obligations to Universities and Colleges by Highest Degree Granted in the Sciences and Engineering, Type of Institutional Control, and Type of Activity (Fiscal Year 1990)

Dollars in Thousands

Highest degree Total granted and institutional control	*Total obligation*	*Total academic scince & engineering*	*Research and dev.*	*R & D plant*	*Facilities for instruction in science and engineering*	*Fellowships, traineships & training*	*General support for science & engineering*	*Other- science engineering activities*	*Non-science and engineering activities*
Total all degree levels									
All Institutions	15204563	10461699	9031047	124841	19241	4098713	1425321	734167.1	4742864
Public	9059754	6201054	5273299	86976	12499	209641	95070	523619	2858700
Private	6144809	4260645	3257748	37865	6792	200230	47462	210548	1884164
Doctorate									
All institutions	12126803	10132270	8841374	123783	6840	393162	105689	661422	1994533
Public	7324739	5963317	5141119	86536	6277	197708	69056	462621	1361422
Private	4802064	4168953	3700255	37247	563	195454	36633	198801	633111
Master's									
All institutions	1128802	216507	133557	1038	6585	9205	19293	46829	912295
Public	787558	172915	103550	440	4241	7249	15712	41723	614643
Private	341244	43592	30007	598	2344	1956	3581	3581	297652

Table 13 (continued)

Highest degree Total granted and institutional control	*Total obligation*	*Total academic scince & engineering*	*Research and dev.*	*R & D plant*	*Facilities for instruction in science and engineering*	*Fellowships, traineships & training*	*General support for science & engineering*	*Other- science engineering activities*	*Non-science and engineering activities*
Bachelor's									
All Institutions	914424	83350	42380	20	4294	6635	12614	17407	831074
Public	283019	44576	20624	0	585	3971	6783	12613	238443
Privater	631405	38774	21756	20	3709	2664	5931	4795	592631
Non Science & Engineering degrees									
All Institutions	1034534	29572	13736	0	1522	869	4936	8509	1004962
Public	664438	20246	8006	0	1346	713	3519	6662	644192
Private	370096	9326	5730	0	176	156	1417	1847	360770

Source : National Science Foundation/SRS, Survey of Federal Support to universities, colleges, and non-profit institutions, Fiscal Year 1990

Table 14

Federal Obligations to universities and colleges engaged in Science, Engineering, Research and development during 1970-1990

(Amount in million of dollars)

Federal Obligations		*1970*	*1975*	*1980*	*1985*	*1990*	*Percentage increase between 1970 and 1990*
Total obligations		3236.1	4557.2	8298.8	1097.1	15204.6	369
I.	Total Academic S&E	2187.6	2805.8	4791.0	7257.9	10461.7	378
I.a	R & D	1440.6	2246.1	4160.1	6246.2	9031.0	524
I.b	R & D Plant	44.8	44.8	37.8	113.9	124.8	181
I.c	Facilities for Instructions	28.7	5.0	3.8	4.9	19.2	–43
I.d	Fellowships Traineeships & Training Grant	429.4	201.3	210.1	253.1	404.9	–43
I.e	General Support to S & E	99.7	46.4	91.5	119.2	142.5	43
I.f	Other S & E Activities	266.8	262.3	287.2	520.5	734.2	175
II.	NON-S & E Activities	1049.0	1741.4	507.8	3713.0	4742.9	352

Source : National Science Foundation support to universities, colleges and non-profit institutions, Fiscal Year 1990 not so much by merit as by the candidate's capacity to pay the market price for education.

Unleashing market forces into the realms of education can be extremely hazardous for a society with vast socio-economic disparities and, in comparison to most of the developing countries, a very low level of age-specific participation in post-higher secondary education. Since intelligence,aptitude and talent often do not coincide with economic status, emphasis on making access to higher education dependent upon the capacity to pay can result in the deprivation of many who are meritorious and may have the potential of making a signal contribution to societial development. Many people are, therefore questioning the justifiability of the government's unwillingness to support higher education and its promoting of the policy of "liberalisation" in the education sector.

The Supreme Court, in its judgement in the case of Mrs. Mohini Jain of Meerut Vs. Government of Karnataka, on 30th June, 1992, has already highlighted the problems caused by the functioning of capitation fee colleges. The Court observed that the "Opportunity to acquire education cannot be confined to the richer section of the Society". The court also broadened the scope of fundamental rights and held that government was under the obligation to provide educational facilities at all levels, to its people. Thus the main issues which need to be considered now are given below:

Main Issues

1. Rationale for public sector funding of higher education in India;
2. Implications of the reduction of public support and the so-called "liberalisation" in the funding of higher education in India.

Rationale for Public Funding of Higher Education in India

It is evident from the data given in the preceding paragraphs that Higher Education is primarily a State responsibility even in a country like United States of America, which has free market economy and follows an avowed ideology of privatisation and private profit. In U.S.A. the Government directly supports 78% of the total enrollment in public institutions. All public institutions receive nearly 60 percent of their funds from the Government. The Government extends indirect support to the remaining 22 per cent of the total enrollment in the private institutions by giving federal aid to students. This is very important. What policy should we follow in this regard? Data reveals that in the U.S., 60 per cent of all the students enrolled in private institutions depend on federal aid for their studies. The self financed institutions are also self financed in form rather than in essence. Though the method is round about, those enrolling in such institutions get public funds to pay their fees. This measure, besides securing egalitarian ends, also has the merit of enabling the consumer a chance to make a choice between institutions. Even research and development in science and engineering,carried on through institutions of higher education, is financed through federal agencies.

To be specific, if a country like USA which is a free market economy cannot afford to leave the questions of either access or of the quality of higher education or the financing of R & D to the free play of market forces,how can the Government of India, constitutionally committed to equity and social justice, leave higher education and R & D to the free play of market forces. We all know that above all else , it is R & D which determines the future of a country's economic standing. Effective R & D requires well considered investment into the future and in addition, it also requires the training and induction of the most meritorious students to the tasks of shaping the future. Because of these imperatives, we cannot leave either the training of potential R & D personnel or actual R & D to the market mechanisms, which may not cater with a sense of commitment to the long term developmental needs of the economy. In these circumstances, privatisation may not only be a mistake: it might turn out to be a gamble with the very base of higher capabilities. In democracies public funding becomes relevant because funding works as a lever in the process of development. The government can effectively influence the working and development of educational institutions directly or indirectly, only through funding. This approach has consistently been employed in U.S.A. Unfortunately, such an approach to funding has never been professionally used for improving the functioning of the system of higher education in India. Hence good or bad, one gets the same money.

II. Implications of withdrawal of public support in the name of Liberalisation:

The basic philosophy of "liberalisation", as has already been discussed, is a movement towards gradual decontrol of the government grips on various activities and the initiation and encouragement of private initiatives for the performance of various tasks. Application of liberalization to higher education and the move to curtail public support to it is based on the argument that the recipients of higher education belong mainly to the top 30 per cent of the income group parents and, therefore, such students are in a position to shoulder substantially greater proportion of the cost of education. This it is believed, would relieve the government in terms of their financial commitment in due course of time. Such an argument has to be analysed in terms of:

(i) What percentage of total funding of higher education is already met by beneficiaries by way of paying fees?

(ii) What has been the economic background of the beneficiaries in terms of the capacity to bear the costs of higher education?

Beneficiaries contribution in funding

The beneficiaries of Higher Education in India contribute 13 per cent to the total funding of higher education, by way of fees. If one goes by the figures for various disciplines, one finds that the percentage share of fees by students to the total funding is even higher for some of the professional disciplines. Law, management, engineering are a few examples in which education is increasingly being financed by the fees from the students.

The international comparisons of fees paid by students in India to some of the developed and developing countries brings out the fact that Indian students bear a significantly high share of the total funding of higher education. A study conducted by the world bank gives some estimates about the cost recovery of higher education through user's cost. The estimates are valid in the case of developing countries and clearly indicate that students in the system of higher education in India share a greater burden of total cost of education than their counter parts in many of the African, Asian and Latin America countries. " It is evident from the study that user's fees (13%) as a percentage of Unit Public Cost for India is much higher than that of the users fee as a percentage of Unit Public Cost for many of the developing countries in the World" (More details can be seen in Table No. 15.)

Table No. 15
Cost Recovery of Higher Education Around 1980

User's fees as percentage of unit public cost

Region and Country	*Higher Level*
East Africa	
Botswana	0
Burundi	14.8
Kenya	0
Lesotho	5.0
Malawi	1.0
Mauritius	0
Somalia	0
Sudan	0
Swaziland	-
Tanzania	0
Uganda	-
Zambia	-
Zimbabwe	-
West Africa	
Burkina Faso	0
Central African Republic	-
Guinea	0
Mauritania	0
Nigeria	12.4
Sierra Leone	-
Togo	-
Asia	
India	13.0
Indonesia	23.4
Korea	5.8
Malaysia	2.1
Pakistan	3.7
Philippines	6.9
Thailand	0
Solomon Islands	15.0
Turkey	-
Yemen Arab Rep.	
South America	
Bolivia	1.0
Brazil	5.0
Chile	25.0

Table 15 (Continued)

Colombia	3.4
Costa Rica	8.0
Dominican Republic	1.0
Ecuador	2.0
Guatemala	10.0
Haiti	-
Honduras	10.0
Mexico	0.3-70
Paraguay	0.7
Urugay	5.0

Source: World Bank Report: financing education in developing countries; An exploration of policy options, Washington D.C. 1986

Hence the prevailing myth that beneficiaries of higher education in India bear a negligible cost of higher education as compared to the beneficiaries of higher education in some other parts of the world is not supported by data. On the other hand, it appears that beneficiaries in India have already been sharing a comparatively higher proportion of the funding of higher education than their counterparts in some of the developed and developing countries. It is, therefore,open to questioning, at least on the basis of international comparison as to why India should adopt a policy of privatisation which would add to the already heavy burden of cost on the beneficiaries of higher education in India.

Capacity to bear the cost

Some theory needs to be kept in view while deciding upon the rate of fees to be charged form the students. It is a sound principle that a tax should be imposed keeping in view the capacity of the people to pay the tax. In this context, the studies conducted by A.M. Khusro (1976) as well as the Association of Indian Universities (1986) need special mention. Both studies were based on the socio-economic background of the beneficiaries of higher education at Delhi (the capital of India). Although the first study by Khusro is quite old, its continued validity was re-enforced by the findings of a later study conducted by the Association of India Universities in 1986. This study revealed that 41 per cent of the Delhi University students came from lower income groups with parents having incomes of less than Rs. 250 per month. Another study of AIU with a sample of 751 students drawn from six Delhi colleges, including three campus colleges - St. Stephens, Daulat Ram and Hans Raj, two South Delhi colleges - Venkateswara and Dayal Singh and one East Delhi college -

Vivekanand, revealed that only 16 per cent of the students came from the group with an income of more than 15,000/- per annum. Of the remaining, 12.51 percent came from the group with an income below Rs. 3000 per annum, 27.96 percent from annual income in the range of Rs. 3000-5000 and 24.50 percent in the range of Rs. 5000-10,000 per annum. All this clearly indicates that most of the students came from middle-income and lower middle-income groups (Table 16).

Table 16

Distribution of 751 Sample Students by their Parents' Annual Income Aggregately for Six Colleges, Delhi University, 1972-73-75

	Annual Income	*Number of Students*	*Percentage*
1.	Above 15,000	122	16.24
2	10,001–15,000	116	15.46
3.	5,001–10,000	184	24.50
4.	3,000–5,000	210	27.96
5.	Below 3,000	94	12.51
	R.N	25	3.23
	Total	751	100.00

Source:Sharma G.D. and Mridula, Elite in the making, A.I.U, New Delhi, 1986

The economic background of the parents of the students was also assessed with the help of the data about occupations of the parents of sample students. Data revealed that 1/3rd came from business occupations which also included petty businessmen. Nearly 15 per cent of the parents came from technical, manual or other undifferentiated occupations and another 25 per cent parents belonged to executive, professional and armed forces. This revealed that the middle income group and lower income occupations accounted for one-half of the total students and salaried class accounted for almost 70 per cent (Table-17). All this will become much more impressive and relevant if the household non-fee costs are also taken into account and thereafter the total costs are shown as percentage of family incomes.

Table 17

Distribution of Sample Students by their Parents Occupation and Annual Income Aggregately for Six Colleges, Delhi University,

Parents' Occupation	No. of Students	Percentage
Executive	64	8.53
Professional	91	12.12
Armed Forces (Officer Rank)	10	1.33
Business	233	31.03
White Collar	248	33.03
Technical	21	2.79
Manual	27	3.59
No Occupation	12	1.59
NR	45	5.99
TOTAL	751	100.00

Source: Sharma G.D. and Mridula, Elite in the making, AIU, New Delhi, 1986

The findings of the above mentioned research studies clearly indicate that majority of the students in higher education even at Delhi (which is having relatively higher *per capita* income) belong to relatively lower or middle economic status and, therefore, do not have the capacity to bear the full cost of higher education which comes to around a few thousands of rupees per annum. Thus the desirability of the policy of privatisation (which expects students to bear the full or at least the larger share of the cost of education) has to be seen in terms not only of the hard realities of India but also in the light of world wide experience, particularly of U.S.A., the prototype market economy and free enterprise.

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Journal of Higher Education
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Taking Higher Education High Enough

M.N. PALSANE

Universities in India in general are not known for any quality consciousness. In fact, the idea of 'quality' is linked more with the quality of goods produced by industry, and the certification like 'ISI' mark has been in existence for a long time. In mid-sixties, the Indian Standard Institute was approched by a researcher in education with the problem of certifying the products of the educational institutions. And, as expected, they did not have any system to do so.

The University Grants Commission has set up the National Assessment and Accreditation Council (NAAC) to assess and certify institutions of higher education. The NACC is in the process of developing its techniques and tools. This procedure involves producing a self-study report by the institutions concerned and an on-the-spot inspection peer review by a team of experts on the basis of the self-study report. The purpose here is to assess the institutions in all its aspects.

Such a procedure has been adopted sporadically in universities earlier also to the extent that the universities were visited either by five-year-plan visiting teams or when individual departments staked their claims for special assistance programme. The assessment was undertaken by experts from the peer group.

Quality control should be an ongoing process, whether in industry or education. The principles that are used in TQM or ISO 9000 are largely applicable to education also, if we adopt them suitably. Unfortunately, even now, quality consciousness has not been aroused in the universities and colleges. In fact most of the students are happy with getting less and less though they may have to pay more and more for their higher education. This is obvious when they are seen skipping classes, insisting on largescale option system in examinations and if possible, ignoring even the course contents provided these are excluded from examination. They are most happy when a teacher abandons a class. Only very small fraction of the student population knows the value of education and the role it can and will play in the liberalised world of open competition. Private enterprises in education flourish only on this small percentage. If the present trends continue, the students will start looking only for quality education; this will compel all institutions to emphasise quality to maintain their reputation and retain a fair share of the cliented.

The question, however, is that when avowedly the goal of education is the pursuit of excellence, why should there be any external pressure to inculcate it? Besides it is a most question as to whether the pursuit and attainment of excellence possible in the absence of a strong intrinsic motivation for it.

It is to create this culture and ehtos of self motivation that the Pune university has launched a system of looking at itself critically. The system of peer review is known to organizations like BARC and ISRO. The best available experts are called in to critically examine various programmes for the 'process' as well as the 'outcome' and provide feedback. which is evaluative as well as suggestive from the view point of further improvement. This idea was mooted in this university by Dr. Vasant Gowariker, a few months after he took over as the Vice-Chancellor. There are thirty eight University teaching departments in this University. It was decided to group them as life science, physical and chemical sciences and so on for the purpose of organizing the visits of peer review committees.

To begin the process, each department was asked to consolidate its thinking on its existing status as well as the vision of the future (not too distant, about ten years). Faculty deliberations within each department were put into the form as of a profile document. To establish the authenticity of this document, the concerned heads of the life science departments presented these before the entire faculty. Sufficient care was taken to improve the manner of presentation by the use of slides and other materials.

The document for each department contained information mainly about its faculty position, buildings, laboratories, library, other infrastructure, teaching and research programmes, publications, number of students and the perspective about the future shape of the department.

The document for life sciences included Zoology, Botany, Biotechnology, Microbiology and Bioinformatics. The level of expertise invited for the review was of an extremely high order. Experts were selected with particular care with the special purpose of obtainning frank appraisals as well as expert guidance. For instance, Prof. G. Padmanabhan, FNA, Director, Indian Institute of Science and Prof. Obaid Siddiqi, FRS from TIFR were among experts invited. Nine out of the eleven invited experts participated in the review process for two full days. During this time, they listened to the presentations and also independently met the faculty and students, looked at the physical facilities as well as research projects, laboratories, and so on. At the end of it all, they gave their reports along with a few general recommendations for all in addition to specific departmentwise assessment and recommendations.

This process is to be repeated regularly at the intervals of nine months to one year to monitor the direction of the progress made in the light of the vision present.

The same process has been completed with the same kind of rigour and expertise, for the physical, chemical and mathematical sciences {Physics, Chemistry, Electronic Science, Instrumentation Science, Computer Science, Mathematics, Statistics}.

There are thirty eight university teaching departments and all of them will undergo such reviews. This process has several advantages. In the first place, it helps to develop a habit of looking at oneself. Such introspection goes a long way in developing intrinsic motivation. Secondly, this develops a collective orientation. The whole faculty sitting together to create an image for the department is a very rare phenomenon. The achievement on this score may take some time but the process has begun. When the Vice-Chancellor, along with all the officials in the system, the other department's heads and the whole faculty witnesses and participates in this kind of a process, the law of comparative judgment comes into play. It is hoped that a healthy competition may develop and the slow ones might be motivated to gear up their activities.

It is too early to make any judgment on the success of this experiment. It is an attempt for the creation of a new culture and ethos. It is a manifestation of the quest for quality in higher education. It is also an effort to bring in collective/institutional orientation in the work culture in place of letting individual's orientation determining the quality and future of

Journal of Higher Education
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Multiple Choice Papers : Is Guessing Better than Omission? – An Illustration

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Summary

In the evaluation of multiple choice questions (MCQs) deduction of marks for incorrect answers is the commonly used technique to discharge guessing. Most of the entrance examinations in the field of education test the knowledge of the subjects already taught, using MCQs. Here, usual correction-for-guessing formula under corrects for chance success. Pupils have the best chance of making a high score by offering an answer to every question.

Introduction

One-Best Response type is the most frequently used type of multiple-choice question (MCQ) by various entrance examinations in India. This type of question (item) consists of a stem followed by a series of four or five suggested answers for a question or completions for a statement (Hubbard J P, 1971). The instructions to the examinee emphasize the importance of selecting the 'one-best response' from among those offered.

A major consideration in the scoring of MCQs is the fact that it is possible for a candidate to score, sometimes quite heavily, by guesswork alone (Fleming P R et al, 1976). Element of guessing in these types of questions varies with the number of responses (alternatives). In a five-choice item, an individual knowing nothing about the subject matter has a one out of five (20 percent) chance of choosing the correct response by random guessing. This chance increases to 25 percent if a question has only 4 alternatives. Deduction of marks for incorrect answers is the commonly used technique to discourage guessing. Counter marking (Lennox B, 1974), negative marking (Pamphlett R et al, 1995), penalty (Dixon R A, 1994), correction for guessing (Gronlund N E, 1985) are synonyms used by various authors. For scoring, a decision must be made as to which scoring formula will be used. It is essential that clear instructions are provided to the examinees whether negative marking will be used or not in a particular examination.

A potential disadvantage of negative marking is the possibility that it may increase student anxiety and be deleterious to performance (Isaacs, 1994). An awareness that hunches are more often right than wrong (Harden et al, 1976) may tend to avoid under performance by some candidates.

Various marking systems against guessing and scores attributed to various categories of candidates is illustrated in this paper. This illustration is useful in taking decision regarding guessing.

Method

The illustration is based on a hypothetical test consisting of one-best response type items each with four choice. The number of items in the test is arbitrarily chosen as 200 as most of the entrance tests include around 200 items. Scores attributed to various categories of candidates are computed based on binomial distribution (Daniel W W, 1983). Expected score, Best score likely and worst score likely (Dixon R.A, 1994) are presented after rounding them to the nearest integer.

Results

With 4 choice items, an individual knowing nothing about the subject matter has a one-out of four (25 percent) chance of choosing the correct response by random guessing. Table 1 is based on binomial distribution with $p = 0.25$, the probability of choosing the correct response by random guessing.

In a paper containing 200 items, a candidate who knows 40 answers and guesses 160 (Table 1) :

1. *(a) Under a 'no penalty' system*

Will expect to do in terms of 'expected score' as well as another candidate who knows 80 answers but guesses none would expect may occasionally ('best score likely') do as well as another who knows 92 answers but guesses none and is unlikely ('worst score likely') to do worse than another who knows 69 answers but guesses none.

Table 1
Penalty against guessing :Scores attributed to various categories of candidates (Four - choice items)

No. of items		*Penalty system : size of mark subtracted for each incorrect answer (correct answers score one, don't know score zero)*	** Worst score likely*	** expected score*	** Best score likely*
Known	*Guessed*				
100	--	Any	100	100	100
50	--	Any	50	50	50
40	--	Any	40	40	40
etc.	--	Any	etc	etc	etc
40	160	zero	69	80	92
40	160	1/4	36	50	65
40	160	1/3	25	40	56
40	160	1/2	4	20	38
40	160	1	–62	–40	–16
–	200	0	37	50	63
–	200	1/4	–4	13	29
–	200	1/3	–17	0	17
–	200	1/2	–44	–25	–5
–	200	1	–126	–100	–74

** Based on binomial distribution. 'Worst score likely' is arbitrarily defined as score such that only one in 40 such candidates will do worse than this, in the long run. 'Best score likely' is arbitrarily defined as score such that only one in 40 such candidates will do better than this, in the long run.*

(b) Under '1/4 mark penalty' system

Will expect to do in terms of 'expected score' as well as a candidate who knows 50 answers but guesses none; may occasionally do as well as another who knows 65 answers but guesses none; and is unlikely to do worse than another who knows 36 answers but guesses none.

(c) Under '1/3 mark penalty' system

Will expect to do as well as a candidate who knows 40 answers but guesses none; may occasionally do as well as another who knows 56 but guesses none; and is unlikely to do worse than another who knows only 25 but guesses none.

(d) When the penalty is 1/2 mark or more even the 'best score likely' is less than the number of answers known.

2. A candidate knowing no answer but guessing all 200 items in a paper may occasionally under a no penalty system do as well as a candidate who knows 63 answers but guesses none; may do as well under 1/4 mark penalty system as another who knows 29 answers but guesses none; under 1/3 mark penalty system, the candidate will expect to do as well as another who neither knows nor guesses any answers and may occasionally do as well as another who knows 17 answers but guesses none.

Process of Elimination

Some times students arrive at the correct answer to a multiple choice test item through a process of elimination. If a student is able to eliminate at least one incorrect response, then he is left with a maximum of 3 choice. The probability of choosing the correct response by random guessing increases to at least 0.333. Table 2 is based on binomial distribution with p = 0.333.

Table 2

Penalty against guessing : Scores attributed to various categories of candidates

(Four - choice items)

No. of items		*Penalty system : size of mark subtracted for each incorrect answer (correct answers score one, don't know score zero)*	** Worst score likely*	** expected score*	** Best score likely*
Known	*Guessed*				
40	160	0	81	93	106
40	160	1/4	51	67	83
40	160	1/3	41	58	75
40	160	1/2	22	40	59
–	200	0	53	67	81
–	200	1/4	16	33	51
–	200	1/3	4	22	41
–	200	1/2	–20	0	22

***** *Based on binomial distribution, assuming student is able to eliminate atleast one incorrect response in each item. 'Worst score likely' is arbitrarily defined as score such that only one in 40 such candidates will do worse than this, in the long run. 'Best score likely' is arbitrarily defined as score that only one in 40 such candidates will do better than this, in the long run.*

With three–choices (Table 2, after eliminating one incorrect response in each item)

(a) A candidate who knows 40 answers and guesses 160 will expect to do as well as another candidate who knows 58 answers but guesses none expects with a penalty of 1/3 mark; may occasionally do as well as a candidate who knows 75 answers but guesses none expects ; and is unlikely to do worse than another who knows 41 answers, but guesses none. Under 1/2 mark penalty system, the candidate will expect to do as well as another who knows 40 answers but guesses none and may occasionally do as well as another who knows 59 answers but guesses none.

(b) A candidate knowing no answers but guessing all 200 items may occasionally under no penalty system do as well as another who knows 81 answers but guesses none. Even under '1/2 mark penalty system', the candidate may occasionally do as well as another who knows 22 answers but guesses none.

Discussion

The most common formula used for guessing correction is, –1/(n–1) where n is the number of alternatives for an item. i.e. the negative mark for each wrong answer is -1/(n–1). (Gronlund N.E, Ebel R.L. et al). Deducting 1/n–1 mark (penalty score) for each wrong answer is considered as 'fair', designed to exactly neutralise the effect of guessing (Lennox B, 1974 ; Fleming P R et al, 1976).

In the case of four-alternative multiple choice items, the penalty score for each wrong answer is 1/3. This typical correction for guessing applies no special penalty to the one who guesses. It simply tends to eliminate the advantage to the student who guesses blindly in preference to omitting items. Hence, students would act in their own best interest by attempting to answer all questions, even those that they have only a slight basis for answering. (Ebel R.L. et al, 1986).

Our result shows that, a candidate who knows 40 answers and guesses 160, under '1/3 mark penalty' system will expect to do as well as a candidate who knows 40 answers but guesses none; may occasionally do as well as another who knows 56 answers but guesses none; and is unlikely to do worse than another who knows only 25 answers but guesses none. The candidate is unlikely to do worse than another who knows 41 answers, but guesses none if he is able to eliminate at least one incorrect response in each item. Most of the entrance examinations in India, for admission to the professional courses like medical, engineering and other allied science courses test the knowledge of the candidate in the subjects taught at the Pre-university level. Entrance to postgraduate courses in various subjects including Medical and Engineering subjects test the knowledge in the subjects taught at the undergraduate level. The correction-for-guessing formula provides a suitable correction when the basic assumption can be satisfied —that is, that pupils guess blindly when they do not know the answer. When pupils can eliminate some of the alternatives in items and make informed guesses among those remaining the formula under corrects for chance success (Gronlund N.E., 1985).

Entrance examinations which test the knowledge of the candidates in the subjects already taught, pupils can eliminate some of the alternatives and make informed guesses among those remaining. Students may sometimes arrive at the correct answer to a multiple choice test item through a process of elimination. Rejecting responses that seem unsatisfactory, they are finally left with one termed the "right answer", not because they have any basis for choosing it directly, but simply because none of the others will do (Ebel R.L. et al 1986). In this situation a penalty of 1/(n–1), under corrects for chance success.

Conclusion

Whenever the penalty is 1/(n–1) or less, pupils have the best chance of making a high score by offering an answer to every question. The penalty is not likely to hurt more than an omission would.

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Journal of Higher Education
Volume 19 No. 3 Monsoon 1996

Improving Higher Education : A Strategy for Action

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Spiritual teachers of all the religions of India as well as its galaxy of spirited social reformers had the courage of conviction regarding their beliefs. They spoke but freely and fearlessly and practiced what they preached so that they changed the thinking and feeling of a large number of people. The freedom to speak out one's convictions and also the courage to change one's belief, I think, have been at the root of the diversity in India's culture and society.

The diversity of religions, cultures, aesthetic expressions, and social practices also indicate the creativity of the people, Social norms too in the different parts of India have been changing, sometimes imperceptibly and sometimes, radically, adjusting to external circumstances and absorbing new ways of living. Hence, change, innovation or creativity, fearless expressions of convictions, coexistence of diverse modes of living have been the characteristics of the people of India, Rural people, even today, express their opinion frankly and have an open mind to new ideas, though they were, understandably, cautious about adopting them without testing their suitability.

The dynamism of Indian society could be seen even during the British rule in the series of social and political reforms that were carried out. It seems as if, after attaining independence, India's social dynamism in terms of movements for social change suddenly fizzled out. Public life came to be dominated by political forces and political leaders seeking power. People became increasingly dependent on the government initiative even in respect of social reforms. In such an apathetic environment social progress through change in the status quo in public institutions could hardly be expected. Indian society, now, is fragmented into numerous,interest groups, whether in the labour force or the professions, industry, farmers, or the various governmental and civic services. Such groups are concerned only with their vested interests; they are not interested in improving either public life or public morals. The ideal of selfless and dedicated public service became the first casuality after independence. It is not surprising, therefore, that the the educational system of the country, like a buffalo wallowing in a swamp, is apathetic to the proddings of educationists desperate to get it out of the mire!

Also, the public and all the social institutions of the country have got used to the Government of India doing the thinking and planning for them indicating the direction social change should take, and therefore, furnishing the necessary resources for promoting the changes. The higher educational system at present is entirely in the hands of the Government of India.

The academicians have become ineffective in initiating changes in the educational system. Of course, there do exist some vested interest groups which dominate the educational establishments too. They, however, have no interest in improving the system. Unless they perceive some benefits from the proposals for changes in the educational system, they will try their best to maintain the status quo.

The mounting cost of living and consequently, the increasing pressure for augmenting incomes; the overwhelming student population, the assurance of a tenure of service, disregard of professional performance as a criterion in the context of promotions, rewards of penalty, paucity of resources for enriching teaching and learning, are all factors that contribute to the prevailing apathy and lack of professionalism among university teachers. In general, university teachers are motivated chiefly by the materialistic goal of earning as much as possible, and students are concerned only with the utilitarian goal of earning their degrees. In such a situation change or improvement in the educational system cannot be expected to happen easily. It is not surprising, therefore, that the recommendations of the National Educational Policy face the same fate as those of the earlier Education Commissions.

One cannot help appreciating that, for the first time in its history, the Government tried to facilitate the implementation of the National Educational Policy of 1986 by translating the broad policy framework into a plan of action. Unfortunately a change of Government at the Centre in 1989 led to the appointment of another committee to review the NEP plan of action, which made the recommendation that education at all levels should be treated as a right of every citizen. This sparked off a good deal of controversy and confusion among academicians and the public. (1) But soon afterwards there was again a change of Governments at the centre in 1991. The new Central Government, faced with a severe financial crunch, froze the allocation of grants to higher education and indicated that thereafter institutions of higher education should generate their own financial resources to meet increases in their expenditures (2).

The plight of higher education in the past decade is best described by Uberoi in an article on the fate of commissions and committees. Stating that the new National Policy on Education of 1986 contained all that was necessary for equipping our higher educational system with the where withal to meet the challenges facing the nation, the author regretted that the system failed to move because it remained entrenched in the outdated traditions of the nineteenth country. Uberoi pointed out how schemes for examination reforms and vocational education 'got mutilated beyond recognition' at the time of implementation, because they were launched without fulfilling the necessary prerequisite changes in the situation for ushering in the reforms.

One prerequisite *change* badly needed was *in respect of institutional traditions.* Higher educational institutions, as part of a social fabric, represented certain legitimate interests and hence developed some good and some bad traditions. These traditions should have been taken into account and through persuasion and consensus the negative traditions should have been changed. Another prerequisite change pertained to the manner in which the plan for reforms was drafted. Before drafting the plan of action, *teachers' associations should have been involved* and a democratic process of participation by those who would have to implement the plan should have been followed. Another factor which negated the reforms package was the failure to accord high priority to *teacher education,* considering that teachers are extremely important for carrying out any educational reform. Not only it is important to give priority to teacher education, the single most important outcome of teacher education should be a change in the attitude of teachers from one of apathy towards the teaching profession to that of dynamic professionalism. If teachers view teaching as a profession and understand fully what professionalism implies, I believe they will cease to be apathetic to reforms. Lack of professionalism and subservience by materialistic motives while holding a teacher's post combine to create a vicious circle of *teacher's apathy and resistance to educational reforms.*

In the above analysis and in the voluminous literature of equally excellent articles, eminent educationists have emphasised all that needs to be done to reform higher education. However, the first step before introducing any educational reform should be the preparation of the academic community with a positive attitude towards changing the statue quo. All this leads one to the conclusion that *the real challenge lies in discovering the ways and means to promote a positive attitude among the teachers towards* educational *reforms for changing the status quo.* In the following pages some approaches to bring about the required attitudinal changes among the teachers are suggested.

To begin with, those who wish to be teachers should be encouraged to acquire a liberal education at the undergraduate level. Those who have entered the teaching profession in universities and colleges should have frequent exposure, through seminars, lectures, plays, films, radio talks, telecasts and printed literature, to the lives of great teachers like, to mention a few, Socrates, Buddha, Mahavira, Jesus, Sankara, and Vivekananda. For inspiring college teachers, exemplary guest lecturers, scholars, expert communicators, and reputed teachers should be invited to address university classes on various topics included in the college syllabus. Outside the formal classes, interest groups and associations should, on special occasions like annual days, conferences, felicitation etc., invite outstanding teachers who excel in some direction or other, such as scholarship in a subject or excellence of delivery or research. University teachers should have ample scope to participate in exhibitions, competitions etc., in the social activities of the community within which the university functions. *The main aim is to get the academic community to interact with the rest of the society so that teachers gain a social perspective of their role and also attain a social status and a sense of responsibility.*

University teachers should be helped to take pride in the teaching profession and appreciate their own potential for building a worthy citizenry. Especially students of teacher education should be made to realise their importance with reference to the future of the nation. After all, they have the potential of functioning as builders of men and women of fine character, outstanding scientists, scholars and also great achievers in different walks of life. Such a citizenry can be expected to give rise to wise political leaders.

Secondly, the teaching profession should be treated at per with law and medicine. For doing so, functioning as a teacher should require the qualifications and the training for becoming a teacher. This means that *scholarship in the fields of education and the allied fields of sociology and psychology, such as educational theories and practices, educational sociology and educational psychology should be considered as basic prerequisites for the professional preparation of a teacher.* The present tests of eligibility for teaching in universities are focused on factual knowledge of sciences and are and do not serve as tests of professional competence. A given quantum of factual knowledge of a particular subject is only a starting point for teaching. However, it is not a permanent or unvarying corpus especially since all the time some knowledge keeps becoming obsolete as new knowledge is discovered. Competence implies ability to apply knowledge. Therefore, *education for professional competence should be beyond the acquisition of knowledge, to include the ability to select important, up-to-date, and relevant subject matter content needed to achieve the objectives of specific courses of study.* If professional competence as defined here is raised, teachers will be more willing than earlier, and more confident, for experimenting with educational reform. *An ideal situation will be the preparation of teachers and educational administrators who form an academic community that will take the initiative for introducing correctives and improvements in the educational system.*

A third suggestion for enabling teachers to be innovative and bold enough to experiment, research, and change, is to create a tolerant, change oriented and democratic administration. There should be more freedom and authority for teachers to carry on their professional tasks of organising, executing, and evaluating educational programmes. Beyond laying down the broad goals of education in any particular discipline and stating the institutional goals and the philosophy that should underpin the educational system, administration should leave it to the teachers to evolve courses of study by organising the content and selecting methods of teaching and evaluation. Administration should, however, help in coordinating and monitoring the practical application of the decisions made by faculties. *The present administrative infrastructure needs to change rather radically by transforming itself from one that supports centralised and authoritarian function into that which supports a participative and service function.*

Fourthly, external support for universities should be built up. Eminent men interested in public welfare, retired teachers of good repute, the alumni of universities of senior students in courses of teacher education, should be involved from time to time in evaluating the educational programmes offered at the institutional or departmental levels. Such an effort will promote a wider understanding, the establishing of cohesive social groups committed to the agenda of excellence in education, and the interchanging of ideas that may sharpen the academic communities understanding of its tasks.

Another step crucial to the improvement of the university environment and up-gradation of professional standards *is the provision of well stocked and well administered up-to-date libraries with an ambience which would encourage the faculty to spend longer time reading journals and books.* Access to books and borrowing of journals should be easy for teachers at all levels of the university hierarchy. Generous provision of secluded cabins for teachers will encourage serious writing and research work by teachers. Small grants can be made to teachers to buy books on education in connection with projects or research aimed at improving teaching and learning. A generous provision should also be made for encouraging publication of professional books.

If all these suggestions are carried out, then the stage would be set for following a strategy of action. Action is the need of the hour. With this idea in focus a strategy of action is suggested in the following paragraph.

A Strategy for Action

A beginning should be made by *starting a course in education for the orientation of the educators of teachers* at any of the centres for advanced studies already in existence in many universities. This course may consist of seminars, lectures, panel discussions, workshops, group discussions and other innovative means of stimulating thinking and exchange of ideas. The staff of this course for the orientation of teacher educators should be drawn from a distinguished group of authors writing on educational reforms and management of the process of change in the educational system. If this group includes vice-chancellors, registrars, professors and researchers, and other eminent educationists, who have thought and inter-acted on the problems of educational reforms, and have made valuable contribution to the improvement of education, it would inspire teacher educators to build superior teacher education programmes.

Simultaneously, if possible, another movement should be organised *to liberate universities from government domination and restore academic authority to both the university administration and to the faculties.* The academic bodies of the universities, like the Boards of Studies and the Faculties should be strengthened by arming them with the power to monitor the curricula of university departments and other centres. The Senate and the Syndicates should be made more representative by the induction of informed citizens and these would also be empowered to reform and restructure the university administration according to the needs of society and the imperative of excellence in university education.

Yet another step will be *to do away with the system of affiliation,* recognising that the system of affiliation was introduced to have government control over a large number of educational institutions. The present affiliating university campuses can be converted into centres of advanced research and accrediting units for the National Assessment and Accrediting Committee. This step will release many large colleges from being tied down to restrictive measures in developing their own curricula, responding to the needs to the communities in which they are placed and experimenting with new methods of education. Small colleges and institutes of specific studies within a selected area can be grouped together to form a university. Such restructuring of the present set up may provide the N.A.A.C. with an infrastructure of accrediting units that will make accreditation an attainable goal.

Universities should *create Boards of Management* beginning with a nucleus of donors who give endowments, and also *establish fund raising committees*, for financing universities, so that universities are not so completely dependent on Government funding, Independent resources of funds are a prerequisites for true autonomy of the university.

It is expected that the outcome of the strategy of action described above will be universities staffed with teachers professional in their attitudes and competent in their tasks; university environment of freedom in which academic authority and responsibility are borne jointly and a university community which understands problems, innovates changes and proposes reforms in the educational system.

Conclusion

To sum up, a three pronged attack : one involving teacher education; second, aimed at the creation of a university environment of administrative and academic freedom, with financial independence; and third, the development of resources of the university for improvement in teaching and research all of which can be expected to give the required push to the educational system to change.

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Documentation

TIFAC'S 'Technology Vision 2020' Reports

Editor's Note

Technology Information Forecasting and Assessment Council, (TIFAC) an autonomous body under the Department of Science and Technology, Government of India (DST), has since its inception in 1988, played an important role in technology monitoring, technology forecasting and technology assessment as well as the utilisation of forecasting information for initiating concrete and coordinated actions between industry, institutions, entrepreneurs and the government systems.

TIFAC, alongwith CII and several others, took up long term technology forecasting and assessment in order to identify specific technologies for development in India in the future (Future Technology Forecast for India 2020). This has been termed as 'Vision 2020'. In order to facilitate this study, 10 panels were constituted in 1993 in specific areas such as engineering industries, materials and processing, life sciences and biotechnology etc.

Some of the crucial issues addressed by the panels for Vision 2020 pertain to evolution and diffusion of new technologies; competitiveness and cost-effectiveness of alternative technologies; innovations and their feasibility in India; diffusion, adaptability and the practicability of technologies which can change dramatically the Indian economic/social profile etc. TIFAC has till date published 9 reports on 'Technology Vision 2020' and 7 reports on 'Future Technology Forecast for India upto 2020'. Another nine reports are under print now. A list of these reports along with the Summary of a report on Services Technology Vision 2020 is being published for the information of JHE Readers and Educational Institutions.

We believe that the futuristic Vision of the development of the technological scenarios will not only shape India's future but also determine the agenda for research and education in the Universities and other institutions of higher education.

The 'Technology Vision 2020' Reports

S.No.	*Title*	*Ref. No.*	*Price in Indian Rupees*
1.	Agro-Food Processing : Technology Vision 2020 Executive Summary : Milk, Cereals, Fruits & Vegetables	TIFAC : V : 01 :ES	Rs. 1,500
2.	Agro-Food Processing : Technology Vision 2020 Milk – Current Status and Vision	TIFAC : V:01 : DR (M)	Rs. 3,500

3.	Agro-Food Processing : Technology Vision 2020 Cereals – Current Status and Vision	TIFAC : V : 01 : DR (C)	Rs. 2, 500
4.	Agro-Food Processing : Technology Vision 2020 Fruits & Vegetables : Current Status and Vision	TIFAC : V : 01 : DR (FV)	Rs. 4,000
5.	Advanced Sensors : Technology Vision 2020	TIFAC : V : 02 : ESDR	Rs. 2, 500
6.	Civil Aviation : Technology Vision 2020	TIFAC : V : 04 :ES	Rs. 500
7.	Electric Power : Technology Vision 2020	TIFAC : V : 03 :ES	Rs. 500
8.	Waterways : Technology Vision 2020	TIFAC : V : 05 :ESDR	Rs. 2,000
9.	Road Transportation : Technology Vision 2020	TIFAC : V : 06 : ESDR	Rs. 3, 000
*10.	Telecommunication :Technology Vision 2020	TIFAC : V : 07 : ESDR	Rs. 5,000

Future Technology Forecast for India upto 2020

11.	Food & Agriculture : Technology Vision 2020	TIFAC : V: 08 : I : ESDR	Rs. 1,500
12	Engineering Industries : Technology Vision 2020	TIFAC : V: 08 : II : ESDR	Rs. 3,500
13	Health Care : Technology Vision 2020	TIFAC : V: 08 : III : ES	Rs. 1,500
*14.	Health Care : Technology Vision 2020	TIFAC : V: 08 : III : DR	Rs. 3,000
15.	Life Sciences & Biotechnology : Technology Vision 2020	TIFAC : V: 08 : IV : ES	Rs. 1,000
*16.	Life Sciences & Biotechnology : Technology Vision 2020	TIFAC : V: 08 : IV : DR	Rs, 2,500
*17.	Materials & Processing : Technology Vision 2020	TIFAC : V: 08 : V : ESDR	Rs. 4,000
18.	Services : Technology Vision 2020	TIFAC : V: 08 : VI: ESDR	Rs. 3,000
19.	Strategic Industries : Technology Vision 2020	TIFAC : V: 08 : VII : ESDR	Rs. 1,500
20.	Electronics & Communication : Technology Vision 2020	TIFAC : V: 08 : VIII : ESDR	Rs. 1,500
*21.	Chemical Process Industries : Technology Vision 2020	TIFAC : V: 08 : IX : ES	Rs. 1,500
*22.	Chemical Process Industries : Technology Vision 2020	TIFAC : V: 08 : IX : DR (1)	Rs. 3,500
*23.	Chemical Process Industries : Technology Vision 2020	TIFAC : V: 08 : IX: DR (2)	Rs. 3,500
*24.	Chemical Process Industries : Technology Vision 2020	TIFAC : V: 08 : IX : DA	Rs. 1,500
*25.	Driving Forces : Impedances : Technology Vision 2020	TIFAC : V: 08 : X : ESDR	Rs. 1,500

Note :–

ES *Executive Summary*
DR *Detailed Report*
ESDR *Executive Summary & Detailed Report*
DA *Delphi Analysis*
* *Reports under printing*
10% Discount on purchase of Reports for more than Rs. 3,000
15% Discount on purchase of Ten (10) copies/sets of Reports
20% Discount on purchase of Complete set of Reports

SERVICES : TECHNOLOGY VISION 2020*

TIFAC : V : 08 : VI : SS

Services Sector : Technology Vision 2020

(*Summary*)

Services Sector

The primary sector in an economy includes agriculture, mining etc. and this sector in India accounts for 32.7% of GDP and has an annual rate of increase of 3.5%. The secondary sector consists of manufacturing, power etc. forms 25.8% of the GDP with a growth rate 5.9%. Services like trade, storage, transport, communication, finance etc. are the traditional component of the tertiary sector. Newer services that have emerged are advertising, marketing, management etc.

The services sector provides essential inputs to the other two sectors and so they are dependent on efficient delivery of services. Employment in services sector covers a large range of occupations involving relatively little investment in capital equipment. There is also a great potential for exporting services.

Financial Sector

The financial sector includes large number of institutions such as commercial banks, financial term lending banks, insurance companies, capital markets like the stock exchange etc. In the last 25 years the number of branches of commercial banks increased 7 fold to about 65,000 in 1995. Aggregate deposits of commercial banks has increased by 2 1/2 times in the last six years to Rs. 4,500 billion in Jan. 1996.

The gross value added to GDP by insurance services increased at the rate of 7.5% during 1980-81 and 1993-94, but only 22% of insurable persons are covered by life insurance. The number of persons covered will increase significantly due to population increase, economic growth and the rise in the magnitude of risks due to rapid urbanisation. Currently less than 1% of the population have any dealings with non-life insurance business, but the demand on these services will also increase because of growth of manufacturing activities, domestic and international trade, transportation etc. Also demands would be made by new products and services like coverage for treatment of all aliments, personal accidents, financial risks, against natural disasters etc. The business in non-life insurance, even currently, is increasing at the rate of 20% per annum and is expected to get accelerated to 30% in the next decade.

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* *Reprinted with the courtesy of Technology Information, Forecasting & Assessment Council (TIFAC), (Department of Science & Technology), New Delhi-110016; Phones : 651 6073, Extn. 296 & 452 of 667373/662260/662626; Fax : (91) – 011–686 3866, (91) – 011– 685 7643*

Despite voluminous growth in the banking and insurance sectors, the processing and transactions have been carried out by largely manual means. This has adversely affected the efficiency and is a major cause for high rates of charges for financial services, making the introduction of IT for the various operations at the earliest, a necessity. This would mean use of computers for near total electronic data management and the use of telecommunication and multimedia data, adopting a total system approach. Some modern technologies like Automated Teller Machines (ATM), automatic cheque clearing system, telephonic banking, credit cards, electronic funds transfer etc. are being introduced.

In other financial services including insurance services, very little computerisation has taken place. This lack of IT resources has resulted in poor services to customers and inadequate controls leading to delinquency in loans. In capital markets both primary and secondary have only low levels of technology. In primary market the lack of computerisation and communication facilities results in long delays in the finalisation of subscription of new issue. The Bombay and national stock exchange have recently adopted screen based trading.

Towards introduction of IT, steps to setting ATMs in bank locations, extension of Banket to all banks and their main branches and total automation of all major banks have already been initiated. For speedier transaction Indian banks like the foreign ones should install banking terminals at the offices of large corporate clients and also make extensive use of credit cards for reducing cash transactions. In the case of stock exchanges adoption of screen based trading would facilitate the establishment of a national stock market.

Likely time frame for completion of important activities and establishment of facilities for automation of financial services.

Time frame	*facilities/activities*
5-10 years	Networked automatic teller machines Electronic data interchange for banking transactions Smart cards for electronic cash Pay phones etc. Information security systems for confidentiality, prevention of data corruption etc. Financial transactions to conform to legal aspects
10-15 years	Smart phones for home banking operations Electronic fund transfer at the point of sale Optical scanning and digital storage Expert systems for credit risk appraisal, stock price movement, detection of credit and frauds etc.
5-15 years	Manpower development
10-12 years	Customer activated terminal for Virtual branches of bank

Marketing Communication Services

Marketing communication covers services such as advertising, market research entertainment etc. It uses print, audio visuals and other types of mass media. Multimedi techniques are coming of vogue.

Marketing communication depends primarily on the stage of economic development an nature of the target groups. The Indian economy has been growing at an average rate of 5 from 1980/81 resulting in a middle-class population of 200-250 million persons. Thoug currently 70% of the people constitute the rural population it would become only 55% b the year 2020 and the literacy rate is expected at 80%. Because of these trends there are major shifts in marketing communication. The strategy now is to focus on innovation and create new needs.

Marketing research has hitherto been confined to a handful of consumer goods like soaps, cosmetics etc.; Now many of the new products have become relevant. Pattern of consumption of rural population is fast becoming like that of the urban, with mass media reducing the time lag in the diffusion. By 2020 nearly 50% of purchase of durables will be in rural India against less than 30% at the present.

Telemarketing would become important in the urban scenario using television screen and interactive computer communication. On the basis of detailed analysis of developments in different media the future scenario along with emerging opportunities for newer technologies are presented in Appendices 1 & 2.

Marketing : Advertising, Media Consultancy & Infotainment

(Appendix 1)

Future Scenario of Marketing Communication

(Annual turnover Rs. crores)

	Activity	*1995*	*2000*	*2010*	*2020*
I.	Marketing Services : Market Research	60	150	140	800-1000
	Advertising	3500	7000	12000	18000-20000
II.	Mass Media :				
	Press (Circulation/sale)	1500	2000	4000	6500-7000
	TV (Software)	1500	2000–2500	4000	7000-8000
	Cable operations	200	650	2000	8000-10,000
III.	Entertainment Media :				
	Cinema (Production & Collections)	1000	1250	2400	4000-5000
	Music	300	600	1600	2500-3000
IV.	Multimedia	35	120	450	1000-1200
V.	Telecom :				
	Telephone and data	30000	150,000	300,000	600,000-700,000

Notes : (1) All estimates are at 1995 prices.

(2) Cinema includes production meant for cable and TV.

There is some overlap between media and entertainment.

Marketing : Advertising, Media Consultancy & Infotainment

(Appendix 2)

Emerging marketing communications scene : opportunities for newer technologies

Media	*Process function*	*Technology*
Press	Printing	Composing and multi addition
	Delivery	Portable informations technologies
	News collection	Languages translation (automatic)

Appendix 2 (Continued)

Radio	Field recorders Studios field recording units	Portable/mobile radio Hard held terminals
TV	Cable networks Camera	Satellite, Digital audio broadcasting cameras, audio & video studios
	viewer -end-monitors	three-dimensional workstations
	modems transmission towers/lines	Digital disc antenna Encyption for access control
MR	Survey research meters (battery) tape recorders	Viewership metres
AD	Research, measurement instruments for eye-moment measuring	Discriminating meteres
Music	CD Optical stereo sound system four-track sound	Chip for viewer-censoring Stereo music broadcast Multimedia capable PCs
Multimedia	PCs, modems, interfaces phone instruments, Home video games	Multidimensional presentation packages, three dimensional
	Home video games	animation, Multi-lingual audio, interactive, random access to textual & graphics data graphical user interface CD-ROM drive and compact discs essential for PCs to avail multimedia colour video graphics, adaptor monitor and microphone.

Marketing Logistics, Trading and Distribution

The services like the wholesale and retail trade, warehousing, transportation and distribution which link producers/manufacturers with the consumers are the components of marketing logistics. These services accounted for 21.5 percent of GDP in 1993-94. Marketing logistics are required for three broad categories namely agro-based food products, major materials and intermediate goods like coal, steel, cement etc. and consumer goods like durables, textile etc.

The trading and distribution of the above categories are by traditional methods commissioning wholesale distributors at selected centres and a large no. of retailers. Due to increase in GDP and so the need for large volume of products changes are expected inside a decade in trade and marketing logistics.

Future-scenario-trading

Growth of big retail channels, and shopping malls

Growth of convenience shores with bar coding on packaged goods

Expansion of brand label outlets

Installation computer networks and satellite communication

Future scenario-marketing logistics

Faster containers transportation using refrigerated, modular and bulk containers

Larger loads and having greater reach

Improved cargo handling facilities

Modernised Packaging System, loading and unloading system

Establishment of modern, large warehouses

Connectivity between factories/godowns/warehouses/head offices/field offices/supermarkets

Trade Promotion Services

New global trade arrangements are expected to add US $ 213-274 billion annually to world income. The GATT Secretaries have projected largest increase of 60% of world trade in the area of textiles and clothing followed by agriculture, forestry and fishery products. The potential gains of Indian exports is estimated $2.7 billion US dollars (the current export is $20 billion) To explore new markets and new products apart from expanding exports would need trade promotion services. The current promotional services are traditional such as buying, merchandise and advertising display allowances. Newer technologies like computers and telecommunication facilities need to be adopted in order to create databases of products, consumers, markets, competitors etc.

Short term activities (5 years) should include strengthening of IT for trade and building of infrastructure for processing meeting ground with customers. Medium/long term activities (10-20 years) should include large global data bases, communication links and improved transportation and banking facilities.

Human Resources Development

HRD aims at helping people to discover, utilize and enhance their capabilities. The latest human development report of 1995 makes the following relevant points for developing countries; the countries have to make marine investments in human capital, development of managerial and technological skills: the countries should acquire greater control over the expanding 'knowledge industry.'

The above report also assigns India 134th among 174 countries. The statistics of the indices of human developments is very low compared with countries like Malaysia, Thailand and Sri Lanka. The average life expectancy is 60 years (as compared to 70 years in the countries mentioned). The adult literacy rate is 50% and 73% of the population figure no sanitation facilities and 21% have no access to drinking water.

HRD technology vision is given in Appendix-3.

(Appendix-3)

Human Resources Development

HRD : Future Challenges & Priorities

	Activity	*Time-Frame for completion (in year)*
1.	Improvement in primary and secondary Education	
	– Quality & competence of teachers	5-10
	– Entrepreneurship oriented education	5-10
	– Use of multimedia and other mass media technologies	10-15

Appendix 3 (Continued)

2.	Development of Women	
	– Social engineering with widespread social awareness and campaign	5-10
	– Technological interventions for improved women's education	5-15
3.	Investment in Science and Technology	
	– Reorientation of R&D activities more focused on meeting social needs	5-10
	– Leadership training and skills development for institution building for national laboratories and institutions	5-10
	– Devising HRD programmes and strategies for national laboratories and institutions	5-10
4.	Entrepreneurship Development	
	– Development of entrepreneurial skills and employment generation by the Govt., NGOs and financial institutions	5-10
	– Creation of entrepreneurial attitude & spirit, achievement motivation etc.	5-10
	– Improved availability and management of credit facilities	5-10
5.	Human Resources Development Role of Private Agencies & NGOs	
	– Development of entrepreneurial skills and institution building capabilities of NGOs	5-15
6.	Improvement of Performance by Govt. Agencies & Institutions	
	– HRD programmes related to bringing in attitudinal and behavioural changes of Govt. personnel	5-10
	– Infusing professionalism in Govt. Services	5-10
	– Deployment of less manpower and improved mechanisation in Government services	5-15
7.	Concern for Environment	
	– Improved environmental awareness and education among common people through mass communication technologies and contact programmes	5-10

Technical and Management Consultancy Services

Technology has now become a commodity and is traced like any other merchandise. Consultancy services facilitate investment decisions and procurement of technology from suitable sources. The demand for technical consultancy services between 1995 to 2020 will be much faster rate than in the past. The factors influencing future scenario are that organisations will have difficulty to assimilate the increasing volume of knowledge and their applications would need experts in the concerned faults. Also the mainstay of consultancy services would be national and international data bases which would require specialized skills for retrieval.

Growth factors in Technical Consultancy Service and Strategies and Priorities in the future scenario along with the expected time frame are given in Appendices- 4 & 5.

(Appendix–4)

Technical Consultancy

Strategies & Priorities for Future

	Scenario	*Likely Timeframe (in years)*
1.	With the increasing level of specialised knowledge, the organisations would seek more and more assistance from external sources (technical consultants) rather than depending only on the 'in-house' capabilities.	5-10
2.	Technical consultancy functions would be greatly supported by information collated from specialised databases.	5-15
3.	The focus would shift from pedagogy to more specific and specialised training right from undergraduate levels in education.	10-15
4.	The key sectors like infrastructure (power, ports, water management, telecom, housing etc.), natural resources (mining, oil & gas exploration, water resources etc.) and services would record high growth and call for technical consultancy support.	5-10
5.	Technical consultancy would be sought for application oriented new materials development suitable for high temperature, corrosion, erosion and wear resistance.	10-15
6.	Consultancy related to computer technologies would be more related to system integration and application specific package development with the involvement of area experts.	5-10
7.	Safety, health and environment would emerge as important areas for consulting inputs.	5-10
8.	The technical consultancy sector may be accorded industry in view of financial assistance etc. and promoted with adequate fiscal incentives.	5-10
9.	Creation and marketing of technical database may emerge as lucrative business	5-10
10.	An efficient and unified coding and classification system would have to be evolved for an effective assimilation of the vast knowledge-base.	5-10

(Appendix–5)

Management Consultancy

Strategies & Priorities for Future

	Activities	*likely Time-frame (in years)*
1.	Consultancy for retraining, redeployment and business process reengineering of client organisations.	5-10
2.	Consultancy for diversification, joint ventures and business alliances for client organisations.	5-10
3.	Consultancy, in mergers & acquisitions, divestments, downsizing of client organisations.	10-15
4.	Consultancy in outsourcing, franchising, strategic business unit concept for client organisations.	5-10

Appendix 5 (Continued)

5.	Use of proprietory and public domain databases by the consultants	5-10
6.	Increased application of modelling and simulation techniques in problem solving by the consultants	5-10
7.	A shift from pedagogy to practical problem solving and experience sharing in management education.	5-10
8.	International Business, Strategic Management Technology and R&D Management, Quality Management and Environment Management would be future thrust areas in consultancy.	5-15
9.	Training & skills development based on self training system, and multimedia devices for client organisations.	5-10
10.	Agribusiness, Biotech applications, consumer products, infrastructure (power, telecom, roads, transportation, ports etc.)., IT strategy would dominate the consultancy business in future	5-10

Testing, Certification & Calibration Services

Quality consumerism has started gaining moment in India only from the last decade. Quality compliance has been enforced by export obligations, defense or some critical application. The traditional evaluation of physical and chemical properties there is a shift towards performance testing and impurity profiles.

Servicing export market calls for manifold increase in testing and calibration facilities. Dichotomy in quality conformance would exist for some more time for domestic & exports markets. With improved economic prosperity the gap in the two quality requirements may be bridged.

Future analytical requirements would focus safety evaluation performance testing and impurity profile of the product. This would call for the state of the instrumentation facilities which would need heavy investments in large laboratories. Primary calibrators should strictly comply with envision mental conditions viz temperature, humidity absence of particulate etc. Accreditation authorities responsible for qualifying testing and calibration agencies would need to quality their own quality systems as per international norms like EN 45003. Independent voluntary authorities viz ASTM need to be created in the place of relying solely on Government agencies.

The strategies to be adopted are given in Appendix-6.

(Appendix–6)

Testing, Certification & Calibration Services

Strategies & Priorities for Future

	Activities	*Time-Frame for completion (in years)*
1.	Accreditation bodies for qualifying various calibration/testing agencies to conform to international norms themselves.	5
2.	Accreditation systems to be initiated for inspection/certification agencies	5-7
3.	Financial incentives and infrastructural support to quality assurance, testing & certification as an important business entity for its fast proliferation across the country	5-8

Appendix 6 (Continued)

4.	Facilitation of technical cooperation and MoUs between India and International accrediting agencies for quality business	5-8
5.	Improved awareness for insurance companies towards calculation of premium etc. based on product quality, safety norms, preservation needs and other environmental regulations.	8-10
6.	Testing & certification for gems and jewellery for international market	5-10
7.	Establishment of voluntary, non-profit organisations for accreditation in various areas of specialisation.	5-10
8.	Privatisation and autonomy in maintaining calibration facilities, test houses, inspection agencies and accreditation authorities governed by market economy.	15-20

Government Administration

Traditionally role of the Government administration was confined to certain essential services like defence, law and order etc. Towards improvement of living standards the Indian government launched a process of planned economic and social development. In this process the private sector activities in large number of areas got regulated, the government itself became one of the economic agents by establishing many commercial and industrial enterprises.

Such activities widened the scope of government administration for policy formulation, framing of rules and regular and implementation of the policy. The proliferation of government agencies and the rising cost of administration put enormous strain on the system and the change in global economic environment has led to economic reforms.

The economic policy reforms aim at redefining the rote of government administration through dismantling the regulatory framework in many economic sectors. The purpose is to integrate the Indian economic with global economy for efficient use of available natural and human resources.

The strategies to be adopted are given in Appendix-7.

(Appendix-7)

Government Administration

Strategies & Priorities for Future

	Scenario	*Likely Time-Frame (in years)*
1.	The Government administration to undergo a radical change towards service orientation for 'facilitation', from acting as 'administrators' to 'managers' and 'team players.	10-15
2.	Instead of exercising controls and curbs, the Government would function by regulation and adopt a promotional role.	5-15
3.	There would be a greater transparency in the Government functioning.	5-10
4.	The Government would need improved access to information for an effective decision making process.	5-15

Appendix 7 (Continued)

5.	The decision making and planning processes in the Government to involve more and more area specialists inducted from major segments of the society like R&D, industry, consultancy, academia, NGOs, sociologists and others.	5-10
6.	Towards an effective integration of Indian economy with the global one, the Government has to keep abreast with the international developments and reorient its policies and practices.	5-10
7.	In tandem with the development demands in the international arena, the Government has to forge close and cohesive linkage in the decision making process from federal to State to grass-root level aspirations.	10-15
8.	International trade practices like IPR, pesticides residue, product quality etc. and other crucial issues like employment of child labour, violation of human rights etc. would have significant influence on Government policies and planning process.	5-10
9.	Keeping in view the single-most important agenda of Indian economic reforms and better quality of life, the Government has to accord top priority to infrastructure (port, roads, power, telecom etc.) development.	5-10
10.	The radical changes in the Government functioning would warrant specialised training, retraining and skills development needs of the personnel employed.	5-15

Security Services

Security services cover national security, internal security, internal security of commerce and industry and security of the civil sector.

Traditionally national security used intensive manpower rather than technology. But it is currently essential that defense services acquire the state of art technology and all R&D efforts must be pursued to effect the change. Also technically trained personnel should be recruited in large numbers.

Internal security's main role is protecting the population against 60 mt explosions, and gas attacks. The security forces need sophisticated instruments for early detection and neutralization of bombs. Electronics computers, data bases etc. are essential for tracing of criminals, detection of white collar crime, prevention of industrial espionage etc. To face all the new challenges the security services have to be modernised through large scale adoption of science and technology. The implementation in various areas except defense is given in the Appendix 8.

(Appendix-8)

Security Services

	Area		*Technological implications*
1.	Border Security	(i)	Sensors of all type-seismic, thermal, infra-red and electronically needed.
		(ii)	Optical equipment for long range surveillance
		(iii)	Satellite surveillance
		(iv)	Tamper proof documentation-Infra-red, ultra-violet and radiography examination of passports and visas.
		(v)	Computerised access control systems including portable radio computer terminals.

Appendix 8 (Continued)

2.	Prevention of entry of harmful substances into the country	(i)	Metal detectors.
		(ii)	Explosive detectors.
		(ii)	Explosive detectors.
		(iii)	Drug detectors.
		(iv)	Poison, gas, etc. detectors
3.	Explosive detection and neutralisatoin	(i)	Explosive detectors
		(ii)	Explosive neutralisation/disruption detection equipment.
4.	Prevention of sabotage	(i)	Access control systems
		(ii)	Detectors of various types
		(iii)	Arson control systems.
5.	Prevention of Industrial espionage	(i)	Data protection equipment
		(ii)	Sophisticated access control systems
		(iii)	Behavioral science capabilities to detect 'moles' and 'unfaithfuls'.
		(iv)	Anti-everdropping devices to prevent bugging, telephone tapping, fax interception, etc.
		(v)	Sweeping devices and direction finders.
6.	Prevention of white collar crime	(i)	Tamper proof systems
		(ii)	Built-in-safeguards in credit cards, account transfers, etc.
		(iii)	Technical inspection to detect malfunctioning of mechanical devices dealing with money.
7.	Protection of common people and VIPs	(i)	Alarm systems
		(ii)	Electronic fence systems
		(iii)	Bullet-proof cars
		(iv)	System to neutralise electronically and radio controlled explosive devices.
		(v)	Detection of incendiary devices.

Panel on Services

Chairman : Shri P.S. Rama Mohan Rao, IPS (Retd.)
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13. Dr. Rakesh Mohan,
Economic Adviser, Ministry of Industry,
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14. Shri Rakesh, IAS
    Joint Secretary, Fifth Pay Commission (Govt. of India),
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15. Dr. S. Subramanian, IPS (Retd.),
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16. Shri D.K. Sharma,
    Senior Adviser - Trade Promotion,
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17. Shri R.A. Rao,
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    Welcome Group of Hotels,
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Distance Higher Education in India: A Historical Overview

M.S. YADAV and S.K. PANDA

The Beginning

Distance education in India began in the form of correspondence courses in the field of higher education during the post-Independence period. Immediately after the country attained Independence, especially during the fifties, the demand for higher education increased rapidly, chiefly because people perceived it as a means of actualising their social aspirations and enhancing their economic status. This increase in demand naturally resulted in the expansion of educational facilities through planned endeavours.

The Planning Commission spelt out its strategy in this regard by stating that ".... in addition to the provision in the Plan for expansion of facilities for higher education, proposals for evening colleges, correspondence courses and the award of external degrees are at present under consideration" (Government of India, 1960:589). On the basis of these observations proposals relating to correspondence courses were placed before the Central Advisory Board of Education (CABE), the highest educational policy making body, at its twenty eighth meeting held in New Delhi on January 16-17, 1961. The CABE, after giving due consideration, resolved that the matter be studied in detail by a small committee before taking a firm decision in the matter (Government of India, 1961). Accordingly, the Ministry of Education appointed an Expert Committee under the chairmanship of Dr. D.S. Kothari, the then Chairman, University Grants Commission (UGC). The other expert members on the Committee were from the UGC, the Ministry of Education and some of the universities of India. The Committee made many significant recommendations with regard to nature, scope and modes of organisation of the correspondence courses. These included the suggestions that:

(i) Correspondence courses leading to a degree or equivalent qualifications should be administered by universities only.

(ii) For the present, correspondence courses should be confined to a first university degree.

(iii) For part of the course, there should be personal contact between the teacher and the taught, 'contact' classes being organised on a tutorial in preference to a lecture basis.

(iv) To maintain educational standards, it is necessary to associate top-ranking scholars and teachers with the preparation of courses and the selection of textbooks. Some arrangement should be made to organise work in a manner which would ensure continuing improvement in the quality of work.

(v) The correspondence method is susceptible of use in both science and humanities. However, for the present, in view of organisational difficulties, the courses be started only in the faculties of Arts and Commerce, but Science courses should be incorporated as early as possible.

(vi) For a first degree, correspondence courses should normally take longer than a degree at a regular college, say four years instead of the usual three. Outstanding students may, however, be able to compress this into a period of three years. Flexibility in all matters relating to the application of the system to varying needs is strongly recommended.

(vii) Fees for students applying for these courses should be reasonably high in the first year but should be progressively lowered in the second and third years and perhaps, if this is possible, be eliminated altogether in the fourth year.

(viii) Two supplementary aids, viz. (a) refresher courses, and (b) use of radio and television are recommended in order to raise the standards in spoken language and to correct a too much of reliance on the written word.

(ix) Correspondence courses should be run in the first instance by one university, i.e. the University of Delhi and the subjects to be included in the course as well as the details of administration should be as suggested by the Working Committee of the University of Delhi.

(x) It is important to ensure that the scheme is administered so as to achieve economy. This will be possible by virtue of the fact that many items of expenditure incurred at regular colleges can be eliminated under the correspondence system, and also if an adequate number of students participate in it, it would be possible to reap the benefits of large scale organisation (Government of India, 1962).

Thus, as per the operational details worked out by its Working Committee, the University of Delhi established the Directorate of Correspondence Courses (later renamed as School of Correspondence Courses and Continuing Education) in 1962 - for the first time in the country, correspondence courses got introduced at the university stage.[1] The response to the B.A. correspondence course offered by the Directorate was very encouraging. In the first year itself, for the B.A. Part-I, 1,112 students sought admission: this number rose to 7,181 in 1966 for all the three parts of the B.A. pass course. The School added B.Com. to its correspondence courses in 1970.

Early Developments

Immediately after the correspondence courses were instituted by the University of Delhi, a significant development took place in the field of education. The Education Commission, popularly known as the Kothari Commission, was appointed by the Government of India in 1964 to advise the Government on a national pattern of education and on general principles and policies for the development of education at all stages and in all aspects. The Education Commission submitted its report in 1966, and made wide ranging recommendations about the reconstruction of education in India. These recommendations became the major basis of the *National Policy on Education* formulated in 1968 and later also in 1986. In respect of correspondence courses, the Education Commission examined the whole issue in the larger context of higher education. It recognised the need to broadly link the total enrolments in higher education to the manpower needs and to bridge the gap between the enrolment and the demand for higher education by adopting a system of selective admissions. This approach which was based mainly on two considerations, viz. paucity of resources and the balancing of the output of the education system with manpower needs, could also be supported on academic grounds. Standards in higher education tend to rise if there is competition for admission in which the best students get selected on the basis of merit. The

Education Commission pleaded that this reform be introduced as early as possible (NCERT, 1966: 557).

While reviewing the policy of open door access during the first three Five Year Plans in the courses in Arts and Commerce, specially in the affiliating colleges, the Education Commission maintained that the practice had led to deterioration in the standards of higher education. The Commission also observed that, as things stood at the undergraduate stage, a student had the choice either to get admitted to an institution on full time basis or go without education altogether. As a possible via-media between these two extreme positions, the Commission recommended that opportunities for part-time education through programmes like evening colleges, and for own-time education through programmes like correspondence courses, should be extended as widely as possible and further that courses in science and technology (either at degree or diploma level) should also be provided for. The Commission saw these as concrete ways to reduce the capital costs to a substantial extent, specially as enrolments continued to grow at a fast pace (NCERT, 1966:562).

Considering programmes like correspondence courses to be the only means of providing higher education to those who desired to study further but were either compelled to take up employment at the end of the school stage or were not admitted to the full time courses, the Commission dispelled the fear that these would lead to a deterioration in standards, specially if due care was taken to maintain personal contacts with the students receiving correspondence education by organising interactive academic programmes during vacations and holidays. In fact, the Commission saw a possibility that the standards in such courses might tend to be higher because of the more intensive motivation of students. It, therefore, suggested that, by 1986, at least a third of the total enrolment in higher education might be provided through a system of correspondence courses and evening colleges.

The Education Commission was appreciative of the correspondence courses started as a pilot project by the University of Delhi since these had produced satisfactory examination results. Such courses had provided opportunities to those who aspired for higher education but were unable to get admission to regular courses.

While visualising a greater role of correspondence courses even in technical education, the Education Commission cited the experiences of countries such as Australia, United States and the erstwhile USSR in respect of correspondence courses for vocational and technical training programmes like book keeping or accountancy which required no practical workshop training and for which contact periods with a teacher could be arranged during vacations. However, for areas requiring workshops and laboratory training, arrangements could be made for institutions being kept open during the week-ends and vacations. The Commission thus recommended that an immediate beginning should be made to develop a wide range of vocational and technical education through correspondence courses. It was stressed, however, that before this medium could be adopted extensively, very careful preparation and testing would have to be undertaken (NCERT, 1966:705-706).

The Education Commission expressed the view that Indian universities had to shoulder a heavy responsibility in the contemporary state of social and educational development. It recommended that they should, inter alia, develop programmes of adult education in a big way, and to that end evolve a wide-spread network of part-time and correspondence courses. The universities had also to provide these courses in all faculties, not only as extramural preparation for their examination, but also as programmes of in-service education for the professional workers in all walks of life. General adult education programmes were also needed to create a unity of outlook and faith between the masses and the intelligentia. It was envisaged that extension programmes would include provisions for training the intermediate leadership groups, which in the circumstances of the day, could not enter the university even though the future of the country largely depended upon their understanding of and identification with national problems. Above all, it will require that universities function as agencies for a deep and careful study of local, regional and national problems, to which the Government, the public and private organisations and the industry, may turn for advice and guidance.

The Education Commission suggested the concretisation of correspondence courses through the following recommendations:

(i) Students taking correspondence courses should be provided opportunities to meet the teachers occasionally; they should be given the status of rcognised students, and, where possible, they should be attached to some colleges in order to enable them to make use of the library and other facilities.

(ii) Correspondence courses should be supported by well-coordinated radio and television programmes.

(iii) Correspondence courses should not be confined to preparing students for the university degrees; these should also provide agricultural, industrial and other workers such special courses of instruction as would help them improve their productivity.

(iv) Correspondence courses should also be made available for those who desire to enrich their lives by studying subjects of cultural and aesthetic value.

(v) Correspondence courses should be developed for teachers in schools to keep them abreast with new knowledge as well as with new methods and techniques of teaching.

(vi) The Ministry of Education in collaboration with other Ministries should establish a National Council of Home Studies for the purpose of accreditation and evaluation of agencies which provide correspondence courses. This Council could undertake identification of areas in which different types of correspondence courses would be of benefit as well as the promotion of the creation of such courses through appropriate agencies, and also by conducting evaluation and research (NCERT, 1966:797-800).

The Education Commission took note of the fact that in certain states, particularly in the eastern parts of India, there was a large proportion of untrained teachers, and also the facilities for teacher training programmes in those areas were inadequate. It, therefore, recommended measures to expand facilities for providing professional orientation to all the untrained teachers. In this context, a strong recommendation was made for the establishment of at least one Centre for Correspondence Education, preferably in each of the State Institutes of Education, which could provide pre-service courses and, in addition, offer courses of in-service education for all the teachers. Depending upon the age and teaching experience of the untrained teachers, they could be allowed to offer short or part-time or full-time correspondence courses. The Commission was of the view that a flexible programme would facilitate early clearance of the backlog of the untrained teachers.

It may be recalled that the Expert Committee (1961), on whose recommendations the correspondence courses got started in India in 1962 through the establishment of the School of Correspondence Courses and Continuing Education at the University of Delhi, took a very cautious view of these courses though it did consider the correspondence method as susceptible of use in both science and humanities also. It required a lot of organizational arrangements and procurement of pedagogic input to create an effective learning system for distance learners. It was for those reasons that the committee recommended that correspondence courses should be started, to begin with, as a Pilot Project at one university only, viz. the University of Delhi and further that initially these should be for the first degree in Arts and Commerce, to which Science might be added later. The Committee had also stressed that correspondence courses should be administered by universities only. In fact, the Committee was not concerned with other trade and industrial courses run by the professional bodies that might lead to special or specific qualifications.

After the submission of the Report by the Education Commission in 1966, with wide-ranging recommendations about the extension and diversification of correspondence courses, the situation underwent a major change, especially since it was suggested that correspondence courses should include courses in science and technology and should, besides preparing students for the university degrees, also facilitate professionalisation of teachers in remote areas, and in addition provide agricultural, industrial and other workers with courses which would help them improve their productivity.

After widespread discussion on the report of the Education Commission a general consensus emerged on major directions for educational reconstruction.. One of the outcomes was that the four Regional Colleges of Education established under the auspices of the National Council of Educational Research and Training (NCERT) started correspondence courses in 1967 to provide professional orientation and clear the backlog of the untrained teachers. Thereafter, a very rapid expansion of correspondence courses was witnessed in Indian universities. The general acceptability of correspondence courses was adequately reflected in the *National Policy on Education, 1968* which stated that

> "Part-time education and correspondence courses should be developed on a large scale at the university stage. Such facilities should also be developed for secondary school students, for teachers and for agricultural, industrial and other workers. Education through part-time and correspondence courses should be given the same status as full-time education. Such facilities will smoothen transition from school to work, promote the cause of education and provide opportunities to the large number of people who have the desire to educate themselves further and cannot do so on full-time basis" (Government of India, 1968).

The Fourth Five Year Plan (1969-74) attempted to synchronise the measures recommended in the *National Policy on Education, 1968,* with concrete programmes proposed for correspondence education. The Planning Commission emphasised increased use of educational technologies - part-time and correspondence education, modern media of communication, optimum size of institutions - which promote expansion and development with minimum investment but without lowering of standards. With regard to the scope of correspondence courses the plan document observed that such courses had till then been confined to humanities, and therefore, proposed to extend them to other disciplines as well. It further observed that correspondence courses would be organised for untrained teachers working in elementary schools. The cooperation of the State Institutes of Education was visualised in the implementation of such programmes. At the same time the role played by the correspondence courses organised by the erstwhile Central Institute of Education (presently Department of Education of the University of Delhi) and the Regional Colleges of Education of the NCERT at Ajmer, Bhopal, Bhubaneswar and Mysore towards clearing the backlog of the untrained teachers was also commended. The Plan document also took note of rapid increase in university enrolment during the first three Five Year Plans and went on to estimate a further increase of 0.50 million in enrolment during the Fourth Plan period. It suggested that of the additional enrolment of 0.50 million students at the university/college level, 0.05 million students should be educated through correspondence courses. The Commission also suggested that the opening of sub-standard affiliated colleges should be discouraged.

Between 1967 to 1971, when the correspondence courses were getting established in the Indian universities[2], the UGC sent three delegations to the erstwhile USSR to study their system of Evening Courses and Correspondence Courses. The first delegation was sent in March-April, 1967 (Government of India, 1968)[3] and recommended its adoption on a restricted scale for clearing the backlog of untrained teachers already in regular service and also for improving the level of education of trained teachers with varying qualifications. It was pointed out that the success of correspondence courses for teacher training had encouraged their extension to other fields and other kinds of training as well (Singh, 1978:11-13).

The second UGC delegation was sent in September, 1968 to study the Evening and Correspondence Courses (UGC, 1969).[4] During its stay, the delegation visited a number of universities and institutions concerned with teaching, training and research in engineering, technology, humanities, social sciences, sciences and pedagogy. The delegation felt that although there was much in common between the two countries with regard to the objectives of correspondence courses, for historical, social and other reasons it would neither be feasible nor appropriate for India to emulate the Soviet Correspondence System. Nonetheless, we could learn a great deal to introduce certain improvements in our system to increase its operational efficiency. The delegation summed up its recommendations by suggesting that, in India, correspondence courses could be extended to the following areas:

(i) It would be better and economical if some university having a strong department of foreign languages, offers correspondence courses on an all-India level in some selected languages.

(ii) It would be feasible to organise correspondence courses in science subjects, including laboratory work and practicals, and suggested that one or two universities might be encouraged to institute such courses on an all-India level.

(iii) At the postgraduate level correspondence courses could be offered in humanities and social sciences, preferably for in-service candidates.

(iv) Professional education in the fields like agriculture, medicine, engineering, technology, library science, teacher training, social work, law, etc. would have a good scope for correspondence courses provided the training was confined only to field practitioners having some years of practical experience. The delegation also recommended that employers should also be persuaded to permit the correspondence course students to attend contact classes and sessions at the concerned university/institute.

The third delegation[5] consisting of two members visited the erstwhile USSR in 1971. It recommended that:

(i) Given the explosion of university education in India in the years preceding 1971, the impossibility of resisting the demand for it and the limitations of resources, it would be essential to encourage much greater reliance upon correspondence courses.

(ii) Provision should be made for correspondence courses covering commercial, scientific, technical and professional courses with greater job potential. This, by diverting people to vocational courses, would make education relevant to the job opportunities as well as the needs of the society. However, it was also emphasised that the Correspondence Courses Institutes (CCIs) must do adequate preparatory work before starting new courses, particularly at the postgraduate level.

(iii) The correspondence method could be very useful in implementing the scheme of compulsory schooling for all children in our country. It was opined that this had been undertaken successfully in certain other countries.

(iv) The correspondence courses in India could play a three-dimensional role in meeting the educational needs of the country: first, by eradicating illiteracy; second, by educating the adult neo-literates; and third, by expanding and equalising opportunities of higher education for all. It was felt that this scheme would also lighten the financial burden on the parents and reduce the per capita cost of higher education.

(v) A ceiling should be fixed on the maximum number of students that a CCI could efficiently manage, and no university in the same region should start the same type of courses unless the existing CCI had crossed the ceiling.

(vi) Adequate radio and television facilities should be extended to the CCIs to enable them to supplement the courses by radio talks and television programmes. The delegation also suggested several measures to ensure effective use of radio and television and other audio-visual aids in the system of correspondence education.

(vii) A scheme of extensive library facilities for correspondence course students, spread all over the country, should be worked out by the UGC. Provision should also be made for mobile library units to cover the students located in the remote rural areas.

(viii) Specialised training should be imparted to teachers in the methodology of teaching and evaluation specific to the correspondence method of education. The UGC should organise special seminars and workshops for this purpose and encourage the correspondence course teachers to take part in the Annual National Conferences in different subjects so as to enable them to keep uptodate in their field of study. Besides, organising occasional exchange of expertise in correspondence education between India and other countries, participation in the international conferences on correspondence education should also be encouraged.

(ix) The correspondence course students in India have better motivation to study than their counterparts in the colleges. However, they deserve understanding, sympathy and encouragement. Towards this end, the delegation suggested certain concrete measures, viz. employees and workers to be encouraged and patronised by employers to join the courses; provision of study leave for pursuing study through correspondence courses; rail travel concession for attending peronal contact programmes and for appearing at the university examinations; correspondence course students be treated at par with regular college or university students in matters of appointments, etc.

(x) The UGC should provide special grants to the CCIs to set up their own printing units.

(xi) The CCIs, as recommended by the seminar on Open University organised by the UGC and the Ministry of Education in December, 1970, could serve as a nucleus for establishing an open university in the country.

(xii) Each CCI should have an evaluation unit to analyse and periodically assess the success of various methods, techniques and other inputs employed for imparting instructions through the printed lessons, radio talks, correction of response sheets and personal contact programmes (Singh, 1978:16-26).

The deliberations of the three delegations which visited the erstwhile USSR, and their recommendations as contained in the reports submitted by them, helped in keeping the concept of correspondence education under continual scrutiny and also facilitated active examination of the ongoing programmes with a view to its improvement as well as retension. Some of the recommendations of the delegations led to several follow-up measures at various levels. One of these, taken by the UGC Committee on Part-time Education and Correspondence Courses at a special meeting held on September 25, 1972, led to the consideration of the proposal to set up a National Institute of Correspondence Courses (NICC)[6], as a registered society which could function as an autonomous body with a high degree of flexibility in its programmes and activities. The functions visualised for this Institute included the assessment of standards; review of the work of the CCIs; procurement and development of instructional materials; establishment of libraries of books, journals, taped lectures, etc.; organisation of seminars, conferences, workshops, orientation programmes, etc.; special training camps; publication of a journal; and promotion of research in the area of correspondence education.

The UGC at its meting held on December 6, 1972 agreed in principle with the recommendations of the Standing Committee on Part-time Education and Correspondence Courses regarding the setting up of a NICC and constituted a Planning Commitee under the chairmanship of Prof. Rais Ahmed for working out the necessary details.[7] The Committee met on April 5, 1973 to formulate the aims and objectives of the NICC and to consider the organisational set up, staffing pattern and financial implications. However, no further meeting of the Planning Committee was held thereafter and thus the idea of the NICC died an unceremonious death through sheer indifference and inaction.

Besides the idea of setting up the NICC, other ideas relating to correspondence education were also discussed in national fora specially convened for the purpose, sometimes in collaboration with international organizations.

In 1970, the International Education Year, the Ministry of Education and Social Welfare, in collaboration with the Ministry of Information and Broadcasting, the University Grants Commission, and the Indian National Commission for Cooperation with UNESCO, organised a seminar on "Open University" in December. The seminar recommended the establishment of an Open University in India on an experimental basis. It may be remarked here that the term "open university" was used for the first time in such a forum while discussing "distance learning" for which the common usage in academic literature hitherto had been the Institute or the Directorate or School of Correspondence Courses. The open university was conceived or designed as a quality institution, with the object of making higher education available to those who have the capacity and motivation for it but are unable to avail of the existing facilities for the same. Moreover, the seminar made several suggestions relating to the organisation, finances and modes of functioning of the open university and recommended the constitution of a committee to work out the details of the open university in India (Sahoo, 1985).

The Indian University Association for Continuing Education in collaboration with the University of Mysore organised a National Seminar on Correspondence Courses in October, 1972. The seminar deliberated upon various aspects of correspondence courses, and made specific recommendations in respect of: the development of correspondence education as an effective agent of change with regard to the quality and dimensions of higher education; extension of correspondence courses to the postgraduate level; development of radio programmes and study centers; making the submission of answer-sheets compulsory; setting up of research and planning units; periodical review of the working of CCIs; and allocation of adequate funds for the scheme in the Fifth Five Year Plan. The seminar commended the old proposal of the UGC to set up a National Institute of Correspondence Courses (Singh, 1978:37-38).

The Fifth Five Year Plan envisaged the expansion of the facilities for higher education through correspondence courses (Government of India, 1976). According to the Plan proposals, about 25 per cent of the total university enrolment was expected to be served by correspondence courses, which would man about 600 to 700 thousand students joining such courses. This required the UGC to have a comprehensive plan in this regard. The Commission also had to look into the various managerial problems, the machinery to perform the clearing functions, the staffing pattern, the financial pattern, etc. It was agreed that the Commission would get all these problems examined by an Expert Committee. The Expert Committee's recommendations formulated at its meting in May, 1974 were considered by the Standing Committee on Part-time and Own-time Education which met in October, 1974, and the UGC issued revised guidelines and norms on various aspects of correspondence courses to the universities (Singh, 1978: 37-38).

Against the background provided by the perspective of expansion of facilities for correspondence courses in higher education during the Fifth Five Year Plan, two national seminars were organised by the UGC on Correspondence Courses/Education with a view to make it, academically as well as organisationally, an effective system of education. The first national seminar was organised at the School of Correspondence Courses and Continuing Education, University of Delhi, from October 10-12, 1974. The main purpose of the seminar was to assess the performance and identify the problems of the CCIs with a view to suggesting improvements in their functioning. The Directors of Correspondence Courses from all over the country participated in the seminar alongwith other experts form related fields. Very specific conceptual and operational aspects of correspondence courses were examined at the seminar in the light of the field experiences of the participants. Several recommendations were made regarding the scope of correspondence courses, the preparation of reading materials, the financing of such courses and the role of the State, the organisational and administrative set up, the ancillary services such as radio talks, television, etc. Many suggestions and ideas surfaced from the deliberations in more articulated and empirically supported manner, viz. rationale for starting need-based and refresher courses, need for regional study centres with library facilities for increasing contacts with the students, need for evaluative research for the courses, ways to integrate radio and television into correspondence education system and the need to avoid censoring of scripts before broadcasting them.

The second national seminar on Correspondence Education was held from October 4-6, 1976 at the Directorate of Correspondence Courses, Punjabi University, Patiala under the auspices of the Indian University Association for Continuing Education. Twelve papers on different aspects of correspondence education were discussed at the seminar. Several relevant points were put forth in the form of recommendations: while some of the old ideas were reiterated, a few others were put forward in a new light. Some of the more significant observations related to: proper survey of the needs of the population of the designated catchment area, the need for making courses broad-based and inter-disciplinary, allowing the students of correspondence courses the same facilities as are allowed to those in the regular courses, extending radio and television programmes to correspondence course students, establishment of an evaluation and statistics cell for carrying out research on different aspects of correspondence education and creating an information base, the need for establishing a National Council for Correspondence Education, etc.

In the light of the above presentations, some observations may be noted as follows.

(i) Right from the beginning the correspondence method was considered suitable for use for both the humanities as well as sciences. However, there was a lot of criticism of this mode of education in newspapers and other fora even while the Expert Committee was in session in 1961. The Committee took cognizance of this criticism and deliberated on the desirability of producing literature on the scheme for public information, describing the means whereby education of high standard and, at low cost, could be provided through correspondence. The Committee, and later the UGC, sought to lay down procedures calculated to maintain standards of these courses and also safeguard the social image, in terms of other measures, viz.

- correspondence courses to be run by the university system only
- correspondence courses to be given the same status as those of regular courses (this was partly to be achieved by not mentioning the name of the CCI in the degree to be awarded)
- courses to be followed in correspondence education were sought to be the same as those of regular courses, approved by the same academic bodies and certification done through the same examinations
- correspondence courses to be instituted in those subjects only for which the respective universities had well developed departments for regular courses
- involvement of experts from regular education system largely for preparation of reading material, contact programmes, selection of books, etc. (UGC, 1979:83).

(ii) The regular courses of a formal system, their content and even the modes of creating instructional conditions, and thereby teaching-learning processes, etc. became a reference point or a norm to be attained in the CCIs. The best among the institutions in formal system of higher education was considered as the ideal to be emulated by the CCIs. This ideal was more often imagined than found in reality when one looked very searchingly for it among the existing institutions in the formal system.

(iii) It was reiterated at different fora that there was a need to extend the scope of correspondence courses to include other areas of study, viz. technological, industrial, job oriented courses and other work related skills. However, courses offered through correspondence remained by and large of traditional nature as had been in the regular system of full-time education.

(iv) In the absence of comprehensive view of the system of correspondence education, no serious attempt was made to examine its effectiveness and purposive nature within itself, specially in its initial stages. Further, this sorry state was aggravated by the fact that the income of CCIs was not often channelised back into the system to create improved learning arrangements; some universities found the correspondence courses as a much needed source of finance to meet the other requirements of the regular courses. A few more enterprising ones anticipated this and started correspondence courses as a source of revenue to the university.

(v) The traditional correspondence education was found wanting in many respects when considered from the point of view of the developments in distance education (a concept which the open universities in India consciously imbibed to practice). Even the practices of correspondence education were much below the standard when compared to such practices internatinally. It seems that not only there was low motivation for innovation on the part of the correspondence teachers, but also the higher education leadership was equally responsible for the sorry state of affairs that the university correspondence education in India was made to imbibe and perpetuate.

One major organisational reform that had been voiced often for improving the correspondence courses has been in the form of a need to have a National Institute of Correspondence Courses or a Council of Correspondence Courses or an Open University. It has often been argued at several places in the form of recommendations at several fora that such an institute or organisation could make the system more effective and self-sufficient pedagogically and operatinally.

Idea of an Open University

The 1970 seminar on open university inter alia recommended that a committee be apponted by the Government of India to examine the question whether the objectives outlined could be achieved through one open university for the whole country or more than one, and other problems related to the costs involved, formation of methods and media, the categories of students to be served, etc. Subsequently, the Union Education Minister constituted a Working Group in 1971 under the Chairmanship of Shri G. Parthasarthy to consider the question of establishing an Open University in the country.[8]

The Group took note of the fact that the social and political awakening was rapidly spreading to the rural areas and to the less advanced sections of society. This has created a great demand for higher eduation, and in response to these demands, more and more institutions of higher education are being established every year. The Group also considered the task of controlling this expansion by adopting a policy of selective admissions to higher education (NCERT, 1966:557). But this had caused misgivings among a wide section of people because it would affect adversely the interests of less advanced sections of the community. In this connection, the following extract from the Prime Minister's speech in the Rajya Sabha on February 28, 1972 was considered relevant:

"Now most educational experts in the world are for curtailment of university education. But we know that in this country it poses a special problem for us. Those people who have not had the opportunity of university education for all these centuries, naturally feel that such a curtailment will affect them and that therefore education will continue to have a kind of class bias. Surely we do not want that. We have to find a balance in which there can be some changes without shutting off a single opportunity from a person or a family who, for the first time, is in a position to avail himself of this. So, any problem which another country or even eminent educationists think of, has to be looked at in the circumstances which obtain in our country. We have no guidelines in this. We have no examples which we can follow. We have to follow our own path step by step. It can only be done if we think more deeply about all these matters and again if we are willing to make experiments" (Government of India, 1972).

In a situation characterised by an ever escalating demand for enrolment, side by side, with paucity of human and financial resources, one practical choice was to set up an open university system-to provide higher education on a part-time or own-time basis, taking special measures to maintain standards and also ensure access to all sections of the people. Therefore, it was recommended by the group that the Government of India should establish an Open University soon by an Act of the Parliament which should have jurisdiction over the entire country so that students from even the remotest corner of the country can have access to education imparted and degrees offered by such a university.

An outstanding feature of the proposed university should be its readiness to innovate and to experiment. The university should have great freedom to experiment with new types of courses, educational technology and course structures. The Group visualised the use of radio and television for the benefit of the students of open university and made concrete suggestions for their integration into the system of instruction. It also concretised ideas about the facilities to be made available at the study centres. The group recommended that a planning committee should be appointed by the Government to work out the details of the proposed university.

The Group specially emphasised that the proposed university should set up not less than eight centres spread over a number of clusters of students. Of the centres, at least one each in the following types of areas be located:

- a working class area in an industrial town

- a backward rural area with a high percentage of scheduled caste population
- a tribal area
- a locality mainly inhabited by lower income group employees.

The group made specified recommendation about the preparation of reading materials of high standard which may be innovative on one hand, and, on the other, should be written with a view to meeting the requirements of the students to whom teaching facilities would not be available. It should be necessary for this purpose to set up a core group of about a dozen scholars of merit not only in the selected field of scholarship, but also in that of preparing reading material suitable for different levels of educational endeavour which would be covered in early stages of the open university.

The group recognised that while the vehicle of the curricular programmes of the university would be the reading material sent by post, broadcasts and telecasts, the role of the teacher could not be eliminated. Some form of live contact with the teacher(s) would be a necessity. It was, therefore, suggested that teachers with the proper motivation from educational institutions in the universities near each cluster may be selected to provide such live contact (Government of India, 1975).

On the basis of the recommendations and suggestions made by the Working Group a draft bill was prepared by the Union Government for the establishment of a National Open University. Though no progress could be seen in this direction for a few years, the idea kept on recurring in the field of higher education wherever its development in the country was discussed. In 1982 the UGC made suggestion about the need for taking necessary steps for the creation of a National Open University. Both the national seminar of 1970 as well as the 1982 UGC decision were heavily influenced by the establishment of the first Open University in the world in Britain in 1969. It may be incidentally noted that such an influence has even continued uptil now, shaping the development and consolidation of open university system in this country.

While the efforts to establish an Open University at the national level were afoot, rather slowly, cautiously and hesitatingly, the Government of Andhra Pradesh took steps to concretise the idea. On May 25, 1982, it appointed an Expert Committee[9] to prepare a project proposal on the establishment of an Open University in the state. The Committee was requested to submit a detailed report within sixty days (Government of Andhra Pradesh, 1982).

The Committee felt that since it would be extremely difficult for the government to provide adequately for the demand for enrolment in regular institutions there was no choice but to search for alternative channels for imparting learning. The open university was obviously one such alternative.

The Committee was convinced that the provision of access to higher education could be achieved by action on a variety of fronts: its greater accessibility, course structure, organisation of learning activities, new teaching methodologies, transferability between institutions and courses, the flow of publicity material, student finances and the availability of new technologies like radio, television, audio-visual aids and effective and efficient organisation of regional and study centres.

On the basis of the recommendations of the Expert Committee, the Government of Andhra Pradesh established the Andhra Pradesh Open University through an Act of the Legislature in August, 1982 (Government of Andhra Pradesh, 1982). With the establishment of this university a new experiment in distance education got started for the first time in the country. The university (renamed as Dr. B.R. Ambedkar Open University in 1991) has now a network of 100 study centres spread over the length and breadth of the entire State, with a cumulative student enrolment of 180 thousand. As many as 15,356 graduates received their degrees in the first five convocations. The university has instituted courses of several categories, viz. Bachelor's and Postgraduate Degree Programmes, Postgraduate Diploma and Certificate Programmes, M.Phil. and Ph.D. Programmes in Development Studies, etc. The university has published more than 250 volumes of course material covering 30 disciplines. There is an Evaluation Branch in the university which functions as a monitoring and evaluation agency for assessing the effectiveness of instruction offered through various media to the students, which includes investigations of the student's receptivity and maintenance of the desired academic standards. Also established in the university is the Audio-visual Production and Research Centre. Through this Centre's collaboration with the All India Radio, the university has been broadcasting syllabus oriented educational lessons with a state wide coverage for three hours a week in English, Telugu, Urdu and Hindi. Besides the broadcast mode, the university also prepares some lessons of half an hour duration with the extensive coverage of topics in the shape of audio lessons and sends them to the study centres spread all over the state. The Public Relations Branch deals with enquiries, maintains liaison with different branches of the university and outside organizations, releases information through a newsletter and other notifications from time to time (BRAOU, 1992).

All along, especially since 1970, thinking had been developing in the country about the need for establishing an open university at the national level. This thinking got concretised through the recommendations and project proposals made by certain expert committees and agencies (Ed.CIL, 1985). Meanwhile, an encouraging response to the Andhra Pradesh Open University gave an impetus to the idea of open learning systems in the country. This finally culminated in the establishment of the Indira Gandhi National Open University (IGNOU) by an Act of Parliament on September 20, 1985 (IGNOU, 1985).

The IGNOU was established as an instrument to democratise and widen access to higher education for large sections of the population. The preamble to the IGNOU Act articulates the objectives as:

- introduction and promotion of open university and distance education system; and
- co-ordination and determination of the standards in such systems.

The objectives of the university which provide the framework for its operations are specified in the Act in the following terms:

- provide instruction in different branches of knowledge, technology, vocations, and professions;
- strengthen and diversify the degree, diploma and certificate programmes in relation to the needs of employment and the economic development in the country;
- provide access to higher education for large segments of population, specially the disadvantaged groups living in remote and rural areas, the working people, the housewives and other adults;
- promote opportunities for continuing education to upgrade knowledge, training and skills in the context of innovations, research and discovery in the field of human endeavour;
- provide an innovative system of education which is flexible and open in regard to methods, place of learning, etc.;
- provide for education and training in the various arts, crafts, and skills of the country, raising their quality and improving their availability to the people;
- provide for training of teachers required for such activities and institutions; and

- promote national integration and integrated development of human personality through its policies and programmes.

The IGNOU offers a variety of academic programmes (58 programmes, counted separately for English, Hindi and other Indian languages, which together account for 372 courses) (Takwale, 1995). Many more are being worked out. These are offered by its various Schools of Studies: Humanities, Social Sciences, Education, Sciences, Engineering and Technology, Continuing Education, Computer and Information Sciences, and Health Sciences. This is a large academic organisation spread over the entire range of the country with 17 Regional Centres and 244 Study Centres. IGNOU has developed a multi-media approach to instruction: self-instructional print material, video and audio programmes, and academic counselling sessions are the major components of this system. The self-instructional print material consists of course materials, assignments, programme guides and supplementary reading material. Some courses have project work as part of the learning requirements. The electronic media components include audio and video cassettes which are available at the study centres, and sold through agencies, and television programmes telecast in the national network. The study centres are provided with viewing and listening facilities. As on January 1995, there was a total enrolment of about 242 thousand students in all the courses offered (Takwale, 1995).

Besides the offering of academic programmes, as a nodal agency in the distance education system, IGNOU has set up the Distance Education Council as a statutory body to perform the following roles:

- promotion of the open and distance education system;
- co-ordination and maintenance of standards in distance education; and
- financial support to the DE institutions.

It is envisaged in the *Programme of Action, 1992* of the *NPE* that the electronic media would be progressively involved in the expansion of open learning. The *Doordarshan* is already telecasting programmes of the IGNOU sine August 1992. The All India Radio stations of Hyderabad and Bombay are broadcasting selected IGNOU programmes (IGNOU, n.d.). Besides, the university has its own audioconferencing and teleconferencing facilities which are utilised regularly; the Commonwealth Educational Media Centre for Asia on its campus; and the Staff Training and Research Institute of Distance Education for development of distance education functionaries. Besides, of late, a Centre for Extension Education has been established which has provided a new dimension to open education in the country.

Immediately after the establishment of IGNOU, the *National Policy on Education* was announced in 1986. It laid down that the IGNOU would be strengthened and this powerful instrument would be developed with care and extended with caution (Government of India, 1986). All these developments encouraged a few other states to establish their own open universities. The Kota Open University, Nalanda Open University, Yashwantrao Chavan Maharashtra Open University, Madhya Pradesh Bhoj University, and Dr. Baba Saheb Ambedkar Open University were established in Rajasthan (1987), Bihar (1987), Maharashtra (1989), Madhya Pradesh (1993), and Gujarat (1994) states respectively.

At present, there is a large system of distance higher education comprising of CCIs (some of them are renamed as Directorates of Distance Education), state open universities and the IGNOU (which is spread over the length and breadth of the country). Appendix I gives an idea as to how the system has developed over the years, got spread throughout the country and increased in a variety of institutions under distance education.

The Distance Education Council has been entrusted the task of initiating steps for the establishment of a network of all open universities and other distance education institutions.

The network would provide a common pool of academic resources involving courses and programmes prepared and produced by all the member institutions, and this pool would be available for sharing by all the members. The main objective of the network would be to eliminate duplication in preparation/production of courses, to ensure a desirable uniformity in the standards of courses, to offer a wider range of choices to students and to develop a strong delivery system which all the participating institutions support (IGNOU, 1991).

More recently the Central Advisory Board of Education has recommended that each State should have its own Open University. The *Programme of Action, 1992* records that this recommendation of the CABE would be pursued during the Eighth Plan period. This policy action announced by the Government of India suggests that more open universities may come up during the current Plan period of 1992-97 and afterwards.

In terms of enrolment under various distance education institutions as compared to that of regular courses in universities and colleges, Table 1 presents a clear picture over the years, starting from 1975-76 to 1991-92 (till which figures in continuity are available from UGC.). In 1994-95, there were 803,176 students studying through distance education. The highest enrolment was in the state of Tamil Nadu (272,818) and the lowest (492) in the state of Gujarat (UGC; 1996). By the first half of 1996, however, the share of distance education students (in the dual-mode conventional universities and open universities) to the total number of students at higher education stage stands at about 20 per cent.

Table 1: Enrolment in higher education and distance education institutions in India (1975-76 to 1991-92)

Year	*Universities/colleges*		*Distance education institutions*		*Total enrolment*
	(number)	(%)	(number)	(%)	(number)
1975-76	2,426,109	97.42	64,210	2.58	2,490,319
1976-77	2,431,563	96.83	79,718	3.17	2,511,281
1977-78	2,564,972	95.56	119,163	4.44	2,684,135
1978-79	2,618,228	95.15	133,459	4.85	2,751,687
1979-80	2,648,579	95.10	136,699	4.90	2,785,278
1980-81	2,752,437	94.30	166,428	5.70	2,918,865
1981-82	2,952,066	93.84	193,691	6.16	3,145,757
1982-83	3,133,093	94.07	197,555	5.93	3,330,648
1983-84	3,307,649	n.a.	n.a.	n.a.	n.a.
1984-85	3,404,096	n.a.	n.a.	n.a.	n.a.
1985-86	3,570,897	90.96	355,090 (27,629)	9.04	3,925,987
1986-87	3,681,870	91.14	357,791 (28,745)	8.86	4,039,661
1987-88	3,814,417	90.45	402,720 (36,448)	9.55	4,217,137
1988-89	3,947,922	89.68	454,243 (77,748)	10.32	4,402,165
1989-90	4,246,878	88.84	533,441 (66,265)	11.16	4,780,319

Table 1 (Continued)

1990-91	4,425,247	88.72	562,814 (75.417)	11.28	4,988,061
1991-92	4,611,107	87.18	678,063 (122,531)	12.82	5,289,170

Source: Various UGC Annual Reports; figures in parentheses indicate the enrolment in the open universities; n.a. = not available

Detailed information on the four open universities in India (IGNOU, BRAOU, YCMOU, and KOU) are gien in Table 2.

Table 2 : Information on open universities

Details of information	*IGNOU*	*BRAOU*	*YCMOU*	*KOU*
Programmes on Offer	35	14	42	13
Courses on Offer	372	178	171	120
Students Registered	91,398	57,499	43,485	8,557
Students on Rolls	242,000	180,000	129,863	20,120
Regional Centres/P.G. RCs	16	12	8	6
Study Centres	244	100	370	24
Academic Counsellors	12,800	3,245	1,922	1,914
Student Awarded	8,9 17	20,582	1,300	–
Audio Programmes (Cumulative)	605	1,732	226	–
Video Programmes (Cumulative)	512	178	107	–
Staff Strength	1,259	495	167	373
Academic/Professional	370	92	60	45
Administrative	531	331	74	254
Technical Production	208	72	-	30
Others	150	–	33	44

Source: IGNOU (1995)

Table 2 shows that there has been wide variation, among the four functional open universities, in academic programmes and courses, registered students and cumulative students on roll, regional and study centre networks, staff including academic counsellors, and audio/video programmes. Similarly, the choices offered for varieties of programmes, especially the professional courses, vary across universities. Even though the open universities have been able to offer well structured and quality professional programmes, dispelling the scepticism that it may not be possible to deliver professional courses at a distance, their number is very small in comparison to a wide range of such courses available in the conventional university system. What the open universities, in comparison to their conventional counterparts, have been able to achieve against all odds is a media networking across the length and breadth of the country, and its actual use in the form of syllabus-based audio and video programmes, offered nationally through television and locally at study centres/regional centres via audio/video cassettes and audio/video teleconferencing. Further, though there had been recommendations to accommodate one-third or one-fourth of the enrolment in higher education in the distance education system, the pinch of the salt is being felt today as the system has realised that there is a limit to institutional enrolment of students (including the cumulative enrolment), if instructionand support services have to be provided adequately and effectively. However, the successful operation and delivery of open universities today has dispelled the initial fear and unfounded belief that quality distance education is well neigh impossible in this country, and the conventional system is the only channel for quality education. And, in terms of number, open universities will *always* remain ahead of their conventional counterparts.

Future Prospects

The debate on mass education versus quality would remain centre-stage in the decades to come. While the conventional system would go on suffering from the criticism of "islands of excellence in the sea of mediocrity", the open universities would always face the challenge and therefore the upheaval task of maintaining quality while both promising and practising "equality of educational opportunity".

With the present resource crunch for higher education, and possible cuts in future, open universities would stand as more cost-effective. Use of electronic media including satellites, and in such forms including virtual class and virtual university, would further make the system more cost-effective. The distance education system has to devise and offer more vocational/professional/technical programmes to attract a large number of cost-intensive students so as to maintain such programmes and earn for system expansion as well. Open universities have to necessarily depend on means other than student fees and government subsidy for resource generation. Efforts towards self-sufficiency at YCMOU and towards resource generation through consultancy-based programmes (for both national and international agencies) at IGNOU are pointers towards this direction.

With faster global as well as national developments in information and communication technologies, a challenging task for distance education would be media networking and capacity building for such networks and their operations. It would be economical as well as pedagogically more effective if there is collaboration and convergence in the design, development and application of electronic media by distance education institutions, conventional institutions of higher learning, and private/autonomous multimedia institutions. The rapid expansion of private satellite television channels and acquisition of giant media operation by IGNOU necessitate such collaboration, networking and resource sharing.

It may be relevant to consider another unusual challenge open universities would increasingly face in future, i.e. national integration. It is essentially a state of mind of the people, which refers to a unity in outlook towards matters of social organisation. It is very basic to all kinds of development: economic, political, social, cultural, educational, etc. These developmental aspects and their various facets are interconnected. It is this unity in outlook that creates a common consciousness shared by all people in the country. It is this unity that prevents social disorganisation that may arise due to conflicts among different groups.

If national consciousness is to be attained it must be recognised that it pertains to action on several fronts. While it may call for concrete economic measures with a view to creating an egalitarian society, it is also social and psychological in nature. Several sectors of development would contribute towards the fulfilment of this goal including the share of education. Several measures have been recommended by the Emotional Integration Committee (1961), the Deshmukh Committee (1962), and the Education Commission (1966) in terms of the use of regional languages as the media of instruction, social and national service scheme, common school, developing modern Indian languages and promoting national consciousness. There is no denying of the fact that education can play a positive role in this regard. For that matter, the entire educational endeavour has to contribute to some kind of unification of the people. However, the point remains as to what IGNOU or the open learning system can in particular do in this regard, how can it do that, and with what modalities.

One direct and visible mechanism is that the courses offered by IGNOU are available all over the country. The IGNOU has the entire country as its jurisdiction for its educational programmes. Availability of such programmes to people in all corners and length and breadth of the country, and their participation in them to receive education must arouse some kind of belongingness and consciousness. This process is further strengthened through the transfer of credits to other open universities as per the mechanisms developed by the Distance Education Council. To that extent, the open learning systems would definitely contribute to the development of national consciousness and thereby to the cohesiveness and social organisation within the society, and among different groups within it.

Reference notes

1. Early in its deliberations, the Expert Committee in consultation with late Professor N. K. Sidhanta, the then Vice-Chancellor, University of Delhi, who was a member, suggested that this university might operate the scheme in 1962. The University of Delhi agreed to the proposal and appointed a Working Committee to go into the details of its operation. On the basis of the Working Committee's recommendations it was decided that the courses should be restricted, in the first instance, to English, Modern Indian Languages, Mathematics, Economics, Political Science, History and Commerce. It was, however, considered advisable, in view of the Committee, for science subjects to be incorporated into the scheme as early as possible. The Working Committee also worked out details regarding the eligibility conditions, admission criteria, medium of instruction, fee structure, jurisdiction of the courses, etc. Significantly the Working Committee stated that the syllabi and examination would be identical with those prescribed for the regular students. The report of this Working Committee was included as an Appendix to the Report of the Expert Committee, Government of India (1962).
2. By 1971, eleven universities, viz. University of Delhi, Punjabi University, University of Rajasthan, University of Mysore, Meerut University, M.K. University, H.P. University, Panjab University, University of Bombay, Jamia Millia Islamia, Punjab Agricultural University, and four Regional Colleges of Education at Ajmer, Bhopal, Bhubaneswar and Mysore had started correspondence courses.
3. The delegation consisted of Shri N.D. Sundaravaidelu, Joint Educational Adviser, Dr. M.S. Patel, Faculty of Education and Psychology, M.S. University of Baroda and Dr. G. Chaurasia, Officer on Special Duty, NCERT.
4. The delegation consisted of Shri M.M. Beg, Principal, School of Correspondence Courses and Continuing Education, University of Delhi and Dr. S.C. Goel, Education Officer, University Grants Commission, New Delhi.
5. The third delegation consisted of Prof. Bakhshish Singh, Director, Correspondence Courses, Punjabi University, Patiala and Dr. M.L. Mishra, Director, Correspondence Courses, Rajasthan University, Jaipur. The report submitted by this delegation was published in the *U.G.C. Bulletin* of October 15, 1972. The detailed observations and recommendations made by the delegation are also cited in the publication.
6. The Committee considered a proposal prepared by Prof. Bakhshish Singh, who was a Member of the third delegation to USSR in 1971, for setting up a National Institute of Correspondence Courses. Prof. Bakhshish Singh attended this meeting as a special invitee.
7. The Planning Committee consisted of the following members:

(i) Prof. Rais Ahmed, Head, Department of Physics, Aligarh Muslim University.

(ii) Prof. M.V. Mathur, Director, Asian Institute of Educational Planning and Administration, New Delhi.

(iii) Prof. J.N. Kapur, Vice-Chancellor, Meerut University.

(iv) Prof. Bakhshish Singh, Director, Directoate of Correspondence Courses, Punjabi University, Patiala.

(v) Shri D.V. Urs, Director, Institute of Correspondence Curses, University of Mysore.

(vi) Dr. P.C. Mukherjee, Principal, Presidency College, Calcutta.

8. The Working Group consisted of the following:

(i) Shri G. Parthasarathi
Vice-Chancellor
Jawaharlal Nehru University
New Delhi.

(ii) Prof. Satish Chandra
Vice-Chairman
University Grants Commission
New Delhi.

(iii) Prof. V.P. Dutt
Pro-Vice-Chancellor
University of Delhi
Delhi.

(iv) Prof. Moonis Raza
Jawaharlal Nehru University
New Delhi.

(v) Prof. R.C. Malhotra
Vice-Chancellor
University of Rajasthan
Jaipur.

(vi) Prof. S.V.C. Aiya
Director
National Council of Educational Research and Training
New Delhi.

(vii) Shri P.C. Chatterjee
Director-General
All India Radio
New Delhi.

(viii) Shri R.K. Chhabra
Secretary
University Grants Commission
New Delhi.

(ix) Shri R.S. Chitkara
Director
Ministry of Education and Social Welfare
New Delhi.

9. The Expert Committee consisted of the following:

(i) Prof. G. Ram Reddy — Chairman
Vice-Chancellor
Osmania University.

(ii) Sri M.R. Appa Rao — Member
Former Vice-Chancellor
Andhra University.

(iii) Prof. B. Sarveswara Rao — "
Former Vice-Chancellor
Nagarjuna University.

(iv) Prof. B. Ramchandra Rao, M.P. — "
Former Vice-Chairman
University Grants Commission.

(v) Sri M. Chandramouli Reddy, IAS — "
Secretary, Education Department
Govt. of Andhra Pradesh.

(vi) Sri K.V.V. Subba Raju
Director of Higher Education
Andhra Pradesh.

The terms of reference of the above Committee were:

(a) to study the details of the open university such as courses to be conducted, staff pattern (teaching and non-teaching), and financial implications involved thereon;

(b) the effect of the establishment of open university on the existing degree colleges and also correspondence courses run by the universities;

(c) how the establishment of open university will affect the staff and financial positions of the colleges (both government and private) and in universities where the correspondence courses are conducted; and

(d) if the intention is to cover the humanities courses in post-graduation in the universities, how this will affect the existing staff pattern in the universities and consequently the block grant to be released to the university.

Report of the Committee on the Establishment of an Open University (Towards an Open Learning System), Osmania University, Hyderabad, August, 1982, pp.88.

The Committee held its first meeting on 5.6.82 and finalised its report on 7.8.82, which was submitted to the Government of Andhra Pradesh on 9.8.82; quite an expeditiously completed assignment, reflecting a sense of urgency of the purpose and perhaps the cause.

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Appendix I

Establishment of Institutes/Directorates of Correspondence Courses/ Distance Education in India

Sl.No.	*Institutions*	*Year of establishment*
1.	University of Delhi (School of Correspondence Courses and Continuing Education)	1962
2.	Regional College of Education (NCERT), Ajmer	1967
3.	Regional College of Education (NCERT), Bhopal (disontinued)	1967
4.	Regional College of Education (NCERT), Bhubaneswar	1967
5.	Regional College of Education (NCERT), Mysore (discontinued)	1967
6.	Punjabi University (Department of Correspondence Courses)	1968
7.	University of Mysore (Institute of Correspondence Courses and Continuing Education)	1969
8.	Chaudhary Charan Singh University (Institute of Correspondence Courses and Continuing Education)	1969
9.	Jamia Millia Islamia (Urdu Correspondence Course)	1970
10.	Madurai Kamraj University (Institute of Correspondence Courses and Continuing Education)	1971
11.	Himachal Pradesh University (International Centre for Distance Education & Open Learning)	1971
12.	Panjab University (Directorate of Correspondence Courses)	1971
13.	University of Bombay (Directorate of Correspondence Courses, later renamed as Directorate of Distance Education)	1971
14.	Punjab Agricultural University (Department of Extension Education: Correspondence Unit)	1971
15.	Sri Venkateswara University (Institute of Correspondence Courses)	1972
16.	Andhra University (School of Correspondence Courses)	1972
17.	Central Institute of English and Foreign Languages (Department of Correspondence Courses) (deemed university)	1973
18.	G.B. Pant University of Agriculture and Technology (Directorate of Extension: Correspondence Courses)	1973
19.	Patna University (Institute of Correspondence Courses)	1974
20.	Tamil Nadu Agricultural University (Directorate of Extension Education)	1974

Appendix 1 (Continued)

21.	Barkatullah Vishwavidyalaya (Institute of Correspondence Courses)	1975
22.	Utkal University (Directorate of Correspondence Courses)	1975
23.	Kurukshetra University (Department of Distance Education)	1976
24.	University of Jammu (Institute of Correspondence Courses)	1976
25.	University of Kashmir (Department of Distance Education)	1976
26.	University of Kerala (Institute of Correspondence Courses)	1976
27.	Osmania University (Centre for Distance Education)	1977
28.	University of Allahabad (Institute of Correspondene Courses and Continuing Education)	1978
29.	Bangalore University (Directorate of Correspondence Courses)	1979
30.	S.N.D.T. Women's University (Department of Correspondence Courses and Distance Education)	1979
31.	Annamalai University (Directorate of Distance Education)	1979
32.	Udaipur University (distance education programme discontinued)	1979
33.	University of Madras (Institute of Correspondence Education)	1981
34.	University of Calicut (Institute of Correspondence Courses and Continuing Education)	1981
35.	Dr. B. R. Ambedkar Open University (formerly Andhra Pradesh Open University)	1982
36.	Shivaji University (Department of Adult and ContinuingEducation and Extension Work)	1983
37.	Jawaharlal Nehru Technological University (Centre for Distance Education)	1983
38.	Indira Gandhi National Open University	1985
39.	Tilak Maharashtra Vidyapeeth (Open Education Centre) (deemed university)	1985
40.	Gujarat Vidyapeeth (deemed university)	1986
41.	Kota Open University (formerly Directorate of Correspondence Courses, University of Rajasthan, 1968)	1987
42.	Nalanda Open University	1987
43.	Kakatiya University (School of Distance Learning and Continuing Education)	1988
44.	Birla Institute of Technology and Science (Distance Learning Programme Unit) (deemed university)	1988
45.	Maharshi Dayanand University (Directorate of Correspondence Courses)	1988
46.	Yashwantrao Chavan Maharashtra Open University	1989
47.	Mother Teresa Women's University (Distance Education Unit)	1989
48.	Nagarjuna University (School of Correspondence Courses)	1990
49.	Berhampur University (Directorate of Distance Education)	1991
50.	Bharathiar University (School of Distance Education)	1991

Appendix 1 (Continued)

51.	North-Eastern Hill University	1991
52.	Alagappa University (Directorate of Distance Education)	1992
53.	Bharathidasan University (Centre for Distance Education)	1992
54.	Jain Vishva Bharati Institute (deemed university)	1992
55.	Madhya Pardesh Bhoj University	1993
56.	International Institute of Population Sciences (Deptt. of Extra Mural Studies and Dis. Edu.) (deemed university)	1993
57.	Dr. Baba Saheb Ambedkar Open University	1994
58.	University of Hyderabad	1993-94
59.	National Law School of India University	1994
60.	Awadhesh Pratap Singh University (School of Corr. Courses & DE)	1994
61.	Mahatma Gandhi Gramodaya Vishwavidyalaya (Ins. of Dis. Lg. & Conti. Edu.)	1994
62.	Jiwaji University (Institute of Correspondence Studies)	1995
63.	Pondicherry University (Directorate of Distance Education)	1995
64.	Gurukul Kangri Vishwavidyalaya (Department of Distance Education)	1995

Sources: AIU (1994, 1996); Times of India, Marh 2, 1993; University News, August 30 and Dec. 6, 1993.

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Book Reviews

"Making Higher Education Effective by P.H. Sethumadhava Rao", 1996 published by Devika Publication, Delhi 110096; Vii 285 pp;

BALAKRISHNA K. NAYAR

The book: Making Higher Education Effective, by Dr. P.H. Sethumadhava Rao is divided into three parts. Part I consists of 130 pages which reviews the higher education scene in the country and the various steps taken to strengthen it. Part II, consisting of 46 pages deals with (i) Administration & Management, and (ii) Planning for Development Economics and Social Policy. These are two well written papers in which one hardly finds mention of India, except for a quotation from Shri Montek S. Ahluwalia on page 160. Part III running into 87 pages consists of seven appendices.

The various chapters appear to be more like papers, reports, notes, analyses or articles prepared from time to time, than as parts of an erudite book. 'Today' tends to vary from chapter to chapter. Emphasis on higher education in the fields of science, engineering, agriculture and medicine, which hold greater promise for economic development and social transformation, appears peripheral.

For a fair consideration of various aspects of making higher education effective, it is necessary to be clear as to what constitutes higher education and what is the import of being effective.

The formal education system in India serves 106 million students at the primary stage, 39 million students at the middle stage, 23 million students at the secondary stage and 6 million students at the tertiary stage of education according to Dr. Ram. Takwale, Vice Chancellor of Indira Gandhi National Open University (JHE vol. 19, No.2 p. 238) 1996 "As per the latest UGC statistics" says a report on the National Assessment and Accreditations Council (Nov. 1994 - Oct. 1995) published in JHE vol. 19. No. 1, p 146, 1996, "There are 286,000 teachers conducting programmes for over five million students in the higher education sector". Dr. Rao, in the preface to his book say "We have a system of higher education where there are 225 Universities, about 9000 colleges, 60 lakh students, and 3 lakh teachers" (p.v). The student enrollment, as stated on page 4 of the book, "is 4 millions - 80% for graduate courses, 10 per cent for postgraduate courses and 10 per cent for science, technical and medical courses" (?). When we became independent in 1947, says Dr. Rao (p. 52), we had only 19 Universities and 636 colleges with a student enrollment of about 1,06,000, "In 1994, we have a higher education system of more than 220 Universities and University level institutions and more than 8,500 colleges accounting for about, 3,00,000 teachers and over 6 million students. There appears some little uncertainty about the number of students in the field of higher education in India at present.

The phenomenal increase in the number of universities in India from 19 in 1947 to 225 in 1996 can be called only as rapid growth, not development. "The present day University system in India is characterised by a noticeable heterogeneity, where the old and the new, residential and affiliating, central and the state, full-fledged and the deemed, general as well as 'specialised', regional as well as modern, and big as well as small — all co-exist, making the mosaic of the higher educational system polychromatic. A scintillating colour is that of the institutions of national importance (and excellence) which have brought prestige to the Indian higher educational system." [Arora and Sogani in Indian University System – M.V. Mathur et.al. p. 4].

Having had a brief look at higher education, let us see what is the meaning of 'effective'. The Dictionary meanings are (a) having an effect, (b) making a striking impression and (c) producing the intended effect. That higher education has been having an effect is unquestionable. As Professor M.V. Mathur has pointed out in his paper on "Reforming Indian Universities: My Vision" in the book referred to above, India possesses perhaps more university graduates than the entire European Community put together. As for making a striking impression, the recurrent strikes and turmoil in our institutions, and the mounting educated unemployment tell their own tales. Effective has therefore to be taken to mean "Producing the intended effect".

This raises the fundamental question as to what are the primary objectives of higher education. The goal of a University is the pursuit of knowledge and scholarship. Examinations and awards of degrees are only incidental to this main goal. The pursuit of knowledge involves (a) Creation through research and development, (b) preservation through documentation, studies and learning, and (c) dissemination of knowledge through teaching and extension.

Dr. Rao deals at length with the significant role played by UGC in quality improvement and promotion of excellence in teaching and research. A number (?) of university departments had been supported under the programme of special assistance for strengthening teaching and research (CAS/DSA/DRS). Some colleges (?) were selected for participation under the programme of COSIP, COHSSIP & ULP. In order to update the knowledge and professional competence of teachers, 48 Academic Staff Colleges were set up and more than 75,000 teachers provided access. UGC has set up Curriculum Development Centres in a number of Universities and developed model curricula for bringing about qualitative changes in standards. Large investments have been made to support research, particularly in emerging areas like bio-technology, computer sciences etc. The Commission has set up several national facilities like the Nuclear Science Centre at JNU, Inter University Centre in Astronomy and Astrophysics at Pune, Inter University Consortium at Indore (for utilising the facility provided by DAE), Crystal Growth Centre at Anna University, Information Centre for Science at IIS., Consortium for Educational. Communication at New Delhi, and Information and Library Network Centre at Ahmedabad. A Countrywide Classroom Programme over T.V. was launched a dozen years ago which seeks to provide new insight, project new findings, and present information about various places and laboratories.

In spite of all positive steps taken by the UGC, says Dr. Rao. "all is not well with our higher education system". "The complexity coupled with pressure for expansion, mismatch of supply and demand, and limited resources pose a serious challenge to the educational planners in India. There has been a steady erosion of quality of teaching and research which is due to unplanned growth of institutions without having adequate infrastructural facilities. A National Assessment and Accreditation Council (NAAC) has been set up at Bangalore, to monitor the performance of our universities".

We have inherited a system of higher education which is qualitatively dys-functional in relation to the development of the country, says Dr. Rao. "In order to make the system work more efficiently, it has now been decided to introduce vocational education at the undergraduate level. By starting 35 job-oriented courses in 26 universities and 380 colleges all over the country from 1994-95 and 1995-96, it is hoped that the education will become more meaningful at this stage". Five more universities and 321 colleges were added to this list in 1996-97. There have apparently been no takers for three out of the thirtyfive courses. Twelve of the courses have been started in less than

10 institutions each, out of over 700 selected.

Quantity, quality and equity are the major challenges facing our higher educational system. "Although we spend 3 to 3.5 per cent of the GNP on higher education, it has been found that this amount is not enough to maintain good standards for quality education".

Distance Education has been envisaged as an effective means of extending educational facilities to a variety of people who cannot attend colleges. "Currently 40 Indian Universities are offering courses through correspondence" says Dr. Rao on page 70. "Today we have more than 50 conventional universities including four deemed universities in our country, offering correspondence courses to more than six lakhs of students", according to page 76 of the same chapter. Which of these is correct? According to Dr. Takwale, VC of IGNOU "Now 44 universities have correspondence course institutions offering education to 524,435 students during 1993-94". (JHE Vol. 19 No. 2 page 232) They are dualmode. Seven Open Universities have been established so far. Two are non-functional. One is in the process of launching its academic programmes. The other four had an annual enrollment of 200,939 in 1995. (ibid p. 233)According to him "These universities have established a wide net-work of Regional Centres and Study Centres for providing student support services. Around 20,000 academic counsellors have been engaged by these universities, to provide tutorial and counselling services to learners. "The Open Universities in India, though few, have created an impact on higher education by developing a wide range of programmes, by employing audio-visual technology in instructional material, and maintaining high standards", according to Dr. Takwale However, most of the Institutes of Correspondence Courses according to Dr. Rao, are more or less extension departments of the conventional universities and have not been able to fully exploit the potential of distance education (p. 77). After a careful review of the system, UGC has prepared a comprehensive document entitled "Up gradation of Correspondence Courses Institutes to the Distant Education Mode". Hopefully this should help improve matters.

"The entire expenditure on higher education by the Centre amounts to Rs. 1450 crores approximately. The total expenditure by the Centre and States is about Rs. 4000 crores. It has to be debated now by academics and planners whether or not to make higher education free of cost and/or subsidised by charging a very marginal fee" (p-24). While discussing the matter, Dr. Rao. is of the view that the poor and deserving students be given free education and that for others the fees should be enhanced, more particularly for foreign and NRI students, as is the pattern in UK and other countries.

Dr. Rao deals at length with the educational strategy for Rural Development in India, including adult education, eradication of illiteracy and continuing education. "For this purpose", as the Educational Commission Report states, "Education should be developed so as to increase productivity, achieve social and national integration, accelerate the process of modernisation, and cultivate social, moral and spiritual values". The example of Sri Sathya Sai Institute of Higher Lenaning has been highlighted as an outstanding example in this regard.

The quality of higher education depends upon the professional competence of the teachers, the calibre of the students, and the commitment of both. The Countrywide Class Room (CWCR) programme of the UGC, operating since 1984, broadcasts one-hour educational programmes, twice a day, for six days a week, at present, "The broadcasts aim to upgrade and enrich the quality of education, while extending its reach. They also attempt to overcome the obsolescence of the curriculm and present the latest advances in all fields including newly emerging ones" (p-102). Seven Educational Media Research Centres (EMRC's) and seven Audio-Video Research Centres (AVRC's) spread out all over the country contribute to the success of the programme. The Media Centres have produced so far nearly 5,000 programmes in different areas. 6% aimed at the general undergraduates, 30% for professional courses, and 10% to stimulate thinking.

Equity demands that the benefits of higher education spread fairly evenly among the population. According to Dr. Rao "Less than 10% of the population are enrolled in higher education. In other words 90% of the population are deprived of higher education in the country, and some of these may be really deserving". (p.14). He clarifies this latter, on page 68 that "Only 5-10% of the youth in the age group currently have access to university facilities in India compared to 30-50% in much of the developed world". Actually an enrollment of six million may be about seven per cent of the 17-22 age group. This is admittedly less than an enrollment of 80% in USA, 50% in France, 37% in UK and 30% in Japan as reported in the World Development Report 1996 of the World Bank. But it is nearly double the figure of 4% in China. During the last decade (1985-1995) adult literacy in India had apparently increased from 43% to 52%. During the same period adult literacy in China had increased from 59% to 82%. While per capita GNP had increased by 2.9% in India between 1985 and 1995, it had increased by 7.8% in China. Increasing emphasis on all aspects of adult literacy including science, technology and health in addition to literature and culture, has to be an important aspect of higher education, extension, and information technology.

While equity demands equal opportunity for all to pursue higher education, can our universities be expanded to meet the situation? The institutions like the IIT's and IISc, which Dr. Rao refers to as models of excellence, are exclusive organisations to which entry is restricted to the very best. Dr. Rao refers to the recommendation of the Robbins Committee in UK which stated".....courses of higher education should be made available for those who are qualified by ability and attainment to pursue them and wish to do so". We in India are far from achieving even compulsory primary education for all our children even after half a century of independence. Adult literacy is still only about 50%.

The acceptance of the recommendation of the Mandal Commission has however made it obligatory for the central and state governments to ensure that students coming from the scheduled castes, schedules tribes, and other backward classes, especially those from the weaker sections, are fully financed to equip themselves adequately to successfully compete for jobs. Prof. M.V. Mathur (p.454) has suggested that "a series of Ambedkar Colleges be set up in our states in the shape of rsidential colleges with excellent laboratories, libraries, play grounds and hostels and with efficient teachers in supertime scales, to assist and guide promising students from the reserved categories. For the next two or three decades. Ambedkar Colleges can be confined exclusively for such student". Although admissions are to be restricted to promising students, it will be a positive contribution in making higher education of the Mandal categories, and the nation at large, more effective.

On the whole the book gives an excellent resume of numerous steps which UGC has been taking to improve the quality, spread and effectiveness of higher education in India.

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Science as a Questioning Process: By Nigel Sanitt, 1996. Institute of Physics Publishing, Bristol and Philadelphia, 172 pp. Hb. ISBN 0 7503 0369 7.

ARUN S. NIGAVEKAR

This work represents the journey of a scientist with theoritical astrophysics and astronomy background into the realm of scientific enquiry. The Author himself has put it as "science without philosophy was a pale substitute for the study of deep and important problems which, in particular, face astrophysicists. This work stems from my reaction to this process: a scientist's eye view of philosophy and science."

Science is the human process of questioning, both within the world and about the world. In this book the Author has put a view that scientific theorising could be looked as a process and the process of science connects with the problematic or questioning situation and to theories of nature. A zetetic analysis, as this book defines it, seeks to describe and explain how this process works and how it has come about. The Author has defined the word zetetic as "proceeding (to understand any scientific theory) by inquiry and contrasts with erotetic logic which applies to questions in a deductive sense". How to formulate right questions and how effectively they could be used to understand a scientific explanation? Author has gone into details about this and then dealt with (Chapter 5) the subjective nature of science. Later he goes into social aspects of science and argues that they are the part of the whole process of science which in turn, as a human enterprise, has evolved within us as a part of our human nature. He shows that the zetetic model is nothing but rule-governed hierarchical structure for theoritical science and is part of a much wider and more general biological structure.

The Author has put the theory of zetetic model into practice by considering a number of examples in physical and biological sciences. He has examined a wide range of scientific theories from Drawinian evolution to relativity and from quantum theory to cosmology. The entire presentation focuses on linking of historical developments and philosophical knots, which have led to science as it is today, with other areas of intellectual life. The Author has also dealt with topic like "unity between literature and science" and by applying the model comes to a conclusion "Literature is not so much concerned with formal relationship between questions but with provoking, persuading and sharing conceptual ideas which are problematical?" A comprehensive overview is given at the end of the book.

The thread that the Author has followed throughout the book is that a scientific theory could be translated into series of questions and one can fit their answers (and the original questions too) into a hierarchical framework which eventually should help to unfold the logical structure of the theory.

The entire book reflects the Author's personal thinking and journey into an approach which is based on certain logic. It is an interesting approach though the support literature is mostly European. All those who love to understand the link between science and philosophy should certainly read this book.

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